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ADVISORY COMMITTEE ON NUCLEAR WASTE

March 22, 2006

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This transcript has not been reviewed, corrected and edited and it may contain inaccuracies.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE (ACNW)

168th MEETING

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WEDNESDAY,

MARCH 22, 2006

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ROCKVILLE, MARYLAND

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The Advisory Committee met at 8:30 a.m. at
Nuclear Regulatory Commission Headquarters, One White
Flint North, 11555 Rockville Pike, Maryland, Dr.
Michael T. Ryan, Chairman, presiding.

MEMBERS PRESENT:

MICHAEL T. RYAN,	Chairman
ALLEN G. CROFF,	Vice Chairman
JAMES H. CLARKE,	Member
WILLIAM J. HINZE,	Member
RUTH F. WEINER,	Member

1 ACNW STAFF PRESENT:
2 JOHN T. LARKINS, Executive Director, ACNW/ACRS Staff
3 MICHAEL LEE, ACNW Staff
4 DUANE SCHMIDT, Waste Management and Environmental
5 Protection
6 ANDREW PERSINKO, Waste Management and
7 Environmental Protection
8 CHRISTEPHER MCKENNEY, Waste Management
9 and Environmental Protection
10 DEREK WIDMAYER, Waste Management and Environmental
11 Protection
12 DAN GILLEN, Waste Management and Environmental
13 Protection
14 DAVID ESH, Waste Management and Environmental
15 Protection
16 ROBERT JOHNSON, Waste Management and Environmental
17 Protection
18 ANTONIO DIAS
19
20
21
22
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24
25

1 ALSO PRESENT:
2 ERIC W. ABELQUIST, Oak Ridge Institute for
3 Science/Education
4 ERIC L. DAROIS, Radiation Safety and Control
5 Services, Inc.
6 TRACY IKENBERRY, Dade Moeller & Associates
7 DAVID C. KOCHER, SENES Oak Ridge, Inc.
8 THOMAS L. NAUMAN, Shaw Environmental and
9 Infrastructure
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C-O-N-T-E-N-T-S

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

8:32 a.m.

CHAIRMAN RYAN: We have a couple of preliminaries. This is not the ACNW's usual room so in this room if you are speaking into the microphone, please make sure it's pointed directly at you and close to you; otherwise, it won't help our recorder. If you have a nametag in front of you, I think we've got that organized, so you don't need to identify yourself every time you speak but if you don't have a nametag, please identify who you are and who you're with as you speak.

Let me go ahead and start the meeting. The meeting will come to order, please. This is the first day of the 168th meeting of the Advisory Committee on Nuclear Waste. My name is Michael Ryan, Chairman of the ACNW. The other members of the committee present are Vice Chair Allen Croff, Ruth Weiner, James Clarke and William Hinze. Today during the meeting, the committee will conduct the working group meeting on public comments to supplement on of NUREG-1757, NRC's Consolidated Decommissioning Guidance to implement NRC's License Termination Rule.

Mike Lee is the designated federal official for today's session. This meeting is being

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1 conducted in accordance with the provisions of the
2 Federal Advisory Committee Act. We have received no
3 written comments or requests for time to make oral
4 statements from members of the public regarding
5 today's session. Should anyone wish to address the
6 committee, please make your wishes known to one of the
7 committee staff.

8 It is requested that speakers use one of
9 the microphones, identify themselves and speak with
10 sufficient clarity and volume so they can be really
11 heard. It is also requested that if you have cell
12 phones or pagers, kindly turn them off or place them
13 in a mute mode. At this time, I'll turn over the
14 meeting to Dr. Jim Clarke, Chairman for today's
15 working group meeting on the License Termination Rule.
16 Dr. Clarke.

17 MEMBER CLARKE: Thank you Mr. Chairman.
18 I welcome all of you to this second working group
19 meeting on proposed revisions to the Decommissioning
20 Guidance. The ACNW appreciates the opportunities it
21 has had for early and continued involvement in
22 decommissioning guidance revisions process. In April
23 2005, the committee attended a staff workshop on the
24 proposed guidance revisions and held its first working
25 group meeting in June of 2005.

1 In that meeting we were assisted by a
2 panel of invited experts, several of whom have been
3 able to join us today and graciously agreed to
4 participate. Also, in October of 2005, we held a
5 working group meeting near the West Valley site on the
6 decommissioning status and performance assessment work
7 that is being done there. Two of the experts with us
8 today participated in that meeting as well.

9 Today we will receive presentations from
10 the NRC staff on the status of the proposed revisions
11 and a summary of the comments that were received in
12 preliminary plans to revise the guidance. As usual we
13 have a full agenda, a busy day ahead of us.
14 Nevertheless, the primary goal of this meeting is a
15 good exchange of information and ideas. We've built
16 time into the agenda for questions and discussion and
17 we encourage interaction.

18 If I have to keep us on schedule, I will
19 do my best to do that but please note that we have
20 reserved time at the end of the day for a roundtable
21 discussion. Now, it's my pleasure to introduce the
22 panel. Eric Abelquist is Director of the Radiological
23 Safety Assessment and Training Program at the Oakridge
24 Institute for Science and Education, where he provides
25 technical assistance in health physics including

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1 independent verification of decommissioning sites for
2 the NRC and the Department of Energy. He was a major
3 contributor to the preparation of the Multi-Agency
4 Radiation Survey and Site Investigation Manual,
5 NARSSIM, and is author of a book, "Decommissioning and
6 Health Physics, a manual for NARSSIM Users". Eric has
7 graduate and under-graduate degrees in radiological
8 science protection from the University of Lovell. He
9 was also a member of our expert panel for the first
10 working group meeting held in June. Eric, welcome
11 back.

12 Dave Kocher is a Senior Research Scientist
13 at SENES Oak Ridge and a consultant to the ACNW.
14 Prior to joining SENES he was with Oak Ridge National
15 Laboratory for 29 years. He has over 30 years of
16 professional experience in environmental health
17 physics and is a fellow of the Health Physics Society.
18 A frequent author and lecturer on the topic of
19 harmonizing NRC and EPA regulatory approaches to
20 public health protection, he was the principal author
21 of NCRP Report 146, "Approaches to Risk Management and
22 Remediation of Radioactively Contaminated Sites".

23 Dr. Kocher has a PhD in physics from the
24 University of Wisconsin and also served on our expert
25 panel for the West Valley Site Working Group Meeting

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1 held in October. Welcome back.

2 Tracy Idenberry has been an Associate and
3 Senior Health Physicist with Dade Moeller & Associates
4 since 1998. He is the Vice-char of the American
5 National Standards Institute Accredited Committee N13
6 on Radiation Protection and serves as Associate Editor
7 for the Health Physics Journal. Over 22 years of
8 experience, including a wide range of activities in
9 environmental and occupational health physics. Tracy
10 graduated suma cum laude from McPherson College with
11 a Bachelors in Biology and received a Masters from
12 Colorado State University in Radiological Health
13 Science. Tracey also served on our expert panel for
14 the first working group. Welcome back, Tracey.

15 And Tom Nauman, Vice President of Shaw,
16 Stone & Webster Nuclear Services and Northwest
17 Regional Director. Tom has over 30 years of
18 experience in nuclear engineering and project
19 management, construction maintenance, outage
20 management and decommissioning, including development
21 of independent spent fuel installations and dry-cast
22 storage systems. He began his career with
23 Commonwealth Edison where he held progressively
24 challenging positions in construction engineering and
25 maintenance, culminating as the Dresden Unit 1 plant

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1 manager in charge of all spent fuel management and
2 decommissioning activities.

3 He has served as a member of the Nuclear
4 Safety Oversight Board for the Three-Mile Island Unit
5 2 and Saxton Plant Decommissioning Projects for the
6 past several years. Tom has a Bachelor's in
7 Environmental Engineering from Southern Illinois
8 University and is a graduate of the Northwestern
9 University Kellogg School of Business Executive
10 Program for Nuclear Business Leadership.

11 Tom served on both our first Expert Panel
12 for proposed guidance revision and on our Expert Panel
13 for the West Valley site decommissioning as well.
14 Welcome back all of you. We appreciate very much your
15 participation and advice. And now it's my pleasure to
16 turn the meeting to Dan Gillen, who I believe will get
17 us started.

18 MR. GILLEN: Thank you very much, Dr.
19 Clarke. I'm very pleased to be here this morning.
20 I'm Dan Gillen, I'm the Deputy Director of the
21 Division of Waste Management and Environmental
22 Protection of NMSS, and with me here is Andrew
23 Persinko, who is my Section Chief in charge of Special
24 Project Section in charge of this guidance that we're
25 discussing today. I'm please to be here this morning

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1 to continue the ongoing interaction with the ACNW
2 working group on our revisions to the decommissioning
3 guidance and NUREG-1757. The revisions deal with
4 issues that we addressed in our look at the
5 flexibility of the License Termination Rule and issued
6 in a License Termination Rule Analysis. We've since
7 that time, initiated interaction with the ACNW and as
8 Dr. Clarke mentioned, we had a meeting. Well, we
9 actually had two meetings last year. One was a
10 working group that we had that you attended with the
11 public and then subsequent to that, we had a specific
12 meeting with you in which the staff presented all of
13 the issues, good interaction review, received comments
14 from you. We, since that time, published draft
15 guidance out for public comment and we received public
16 comments and that's what we're here today to discuss
17 the public comments and where we're going from here.

18 The key issues that we're discussing this
19 morning and this afternoon are realistic scenario,
20 intentional mixing, removal of material after license
21 termination, onsite disposal under 10 CFR 20-2002,
22 engineer barriers and restricted use of institutional
23 controls. The way we intend to conduct this, this
24 morning, and into the afternoon is that each one of
25 these issues a member of the staff will present

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1 background on each issue, a summary of the public
2 comments on the issue and the current staff
3 considerations in addressing the comments.

4 I wanted to -- before I turn it over to
5 Duane Schmidt, who will be giving a brief introduction
6 before we go issue by issue, I wanted to mention the
7 fact that as we move forward during this fiscal year,
8 we have two key milestones that we're focused upon.
9 The first of those is that by June of this year we
10 will be issuing a Commission Paper to share the
11 results of the public comments with the Commission as
12 they directed us in the Staff Requirements Memo to
13 SECY-0069.

14 Subsequent to that, we are strongly
15 committed to finishing the final guidance by the end
16 of the fiscal year in September of 2006, so with those
17 two key milestones in mind, that's where our focus is
18 on after this meeting today. Before I turn it over to
19 Duane, Drew, is there anything you wanted to add?

20 MR. PERSINKO: I just wanted to just ask,
21 I noticed on the agenda there's a letter-writing
22 session for Friday at 11:00 o'clock at which time, I
23 guess the Committee will compose the letter or discuss
24 the letter to the Commission. We plan to attend that
25 session. It's open, I see.

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1 MEMBER CLARKE: Yeah, I think what we'll
2 be doing Drew, is we'll be discussing the opportunity
3 to write a letter, not the letter itself.

4 MR. PERSINKO: Okay.

5 MEMBER CLARKE: I suspect that we will
6 want to write a letter but we do go through the
7 process of deciding as a group if we want to do that.
8 That will be all that will take place on Friday.

9 CHAIRMAN RYAN: Just to explain, you know,
10 we might talk about major (inaudible) sorry, there we
11 go. We'll talk about major points, things that might
12 be included in a letter, so even though we might not
13 be, you know, down to the fine editing of a draft, it
14 would be very helpful if you were there to hear that
15 discussion and offer your views as we continue the
16 discussion. So --

17 MR. PERSINKO: Good, the sooner we get --
18 the more insight we can get into the letter, I think
19 will be better.

20 CHAIRMAN RYAN: Right, okay. Thanks.

21 MEMBER CLARKE: No, we would very much
22 appreciate if you would be there. I just wanted you
23 to have the right expectations of what we're going to
24 do. Okay. Dan?

25 MR. GILLEN: Yeah, I apologize that I

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1 won't be able to stay here the entire day but I'm in
2 the building so if anything -- if I'm needed, you
3 know, one of my staff can come and get me. Any
4 questions from me before I turn it over to Duane for
5 our first presentation?

6 MEMBER CLARKE: I don't think so. If I
7 could, Duane, let me take this opportunity to
8 introduce the remaining member of our expert panel to
9 you just briefly. Eric Darois has over 28 years of
10 experience as a health physicist including various
11 technical and management positions in nuclear power
12 plants, decommissioning sites, environmental
13 laboratories and with other users of radioactive
14 materials.

15 He's the owner of Radiation Safety and
16 Control Services in New Hampshire and provides
17 consulting and training to a board range of clientele.
18 Eric is presently supporting the Connecticut Yankee
19 and Yankee Road Decommissioning Projects in the areas
20 of LTP development, dose modeling and final status
21 surveys. He holds a Masters of Science Degree in
22 Radiologic Science and Protection from the University
23 of Lovell and also served on our expert panel for the
24 first working group meeting on Decommissioning
25 Guidance Revisions. Eric Darois.

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1 MR. DAROIS: Thank you.

2 MEMBER CLARKE: I believe our next
3 presenter is Duane Schmidt.

4 MR. SCHMIDT: Yes, thanks, I'm Duane
5 Schmidt, Senior Health Physicists in the Division of
6 Waste Management, Environmental Protection
7 Decommissioning Directorate. I'm one of the co-
8 project managers for the development of this guidance
9 in NUREG-1757 Supplement 1. I've got a few slides
10 which might not be up yet by way of introduction, some
11 of which really Dan has already touched on, so I'll
12 try not to be too duplicative here.

13 Dan mentioned and I think, Jim, you might
14 have mentioned the workshop and the previous ACNW
15 working group meeting. The other stakeholder input
16 that we had was through a state working group that
17 worked with us in the development of the Draft
18 Supplement 1. I guess I'm on Slide 2 if anyone is
19 looking at the slides and some of these I'm going to
20 skip. We got public comments from about 12, I
21 believe, individuals, several state agencies, not too
22 many licensees and a few individuals.

23 My last bullet is, you know, I really do
24 want to say that we appreciate the comments that we
25 got from the public. As you'll hear later, I think

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1 some of these public comments have caused us to
2 rethink at least in some ways, were we were going on
3 some of these issues. And so I think it's been
4 helpful.

5 On Slide 3, of course, the purpose of
6 today's meeting is to obtain input from you all on the
7 public comments and on our preliminary plans for
8 addressing comments and moving forward with our
9 guidance. We've already mentioned what the key issues
10 are that we'll be talking about. On Slide 4, we're
11 trying to focus in our discussions on what we think
12 are the most substantive issues that were raised in
13 the public comments. That may not be the same as what
14 you all think, so, of course, you know, the
15 discussions can go wherever the discussions go, but we
16 had to start somewhere.

17 And of course, in finalizing the guidance,
18 we are considering all of the comments, whether or not
19 they get discussed today and, in fact, our plan at
20 this point is to prepare an appendix or some type of
21 document to document how we respond at least to each
22 of the public comments. And just to mention again,
23 that whatever we say today is our preliminary plans
24 and we're getting input from you all. We're going to
25 have additional considerations as we develop a

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1 Commission Paper, so of course, our plans could change
2 but this is the best we've got at this point.

3 Then on the fifth slide, Dan already
4 mentioned the Commission Paper and actually we're
5 shooting for May. I think June is the absolute, but
6 we're shooting for May. So we are trying to get to
7 the fairly quickly and that's part of why we care
8 about getting as much input from you all today and as
9 soon as possible, the earlier, definitely will help us
10 out.

11 So that's really what I've got by way of
12 introduction. If there are any background questions
13 that are appropriate at this time.

14 MEMBER CLARKE: Okay, thank you, Duane.
15 Let's start with the Committee, Dr. Ryan?

16 CHAIRMAN RYAN: If you had to
17 characterize, you know, what were the major topics
18 that you reviewed -- saw in the comments, what would
19 they be, just to give us a preview of what the rest of
20 the day might be like?

21 MR. SCHMIDT: Well, we actually tried to
22 organize the agenda in sort of reverse order. So
23 we're saving the best for last, I guess.

24 CHAIRMAN RYAN: Oh, I see.

25 MR. SCHMIDT: We certainly got the most

1 comments on restricted use and institutional controls.
2 We got a lot of comments, some of them fairly
3 substantial comments. I'm trying to think backwards
4 without looking here. We've got a fair number of
5 comments also on the use of engineered barriers. And
6 then on onsite disposal, in some ways it wasn't as
7 many comments but there was a lot of agreement on the
8 comments on that issue and that's one where we are
9 talking about changing where we were going.

10 The other three issues, part of the reason
11 we lumped them together into one session is that we
12 thought overall those three issues; intentional
13 mixing, use of realistic scenarios, and removal of
14 material after license termination, we didn't get a
15 whole lot of comments and/or not a whole lot of
16 substantive comments, although I think of those three
17 there was more interest in intentional mixing and
18 there's a couple interesting things there, I think.

19 CHAIRMAN RYAN: That's great, thanks.

20 MEMBER CLARKE: Any questions from the
21 panel here? Tom? Eric? Tracey? Okay, thank you.
22 Our next presenter is Chris McKenney and he's
23 reasonably foreseeable land use scenarios.

24 MR. GILLEN: We may have to fill in, I
25 don't know or skip ahead because he doesn't seem to be

1 here.

2 MEMBER CLARKE: Chris was planning to be
3 here. We could do that.

4 MR. SCHMIDT: The plan is messed up.
5 Well, the plan is a little bit scattered already to
6 tell you the truth.

7 MEMBER CLARKE: Well, do you want to do
8 that, Duane? Do you want to continue with intentional
9 mixing?

10 MR. SCHMIDT: That would be fine and so on
11 your slides, that would be Slide 10 and when I say the
12 plan is a little scattered, Derek Widmayer was our
13 lead for this issue of intentional mixing and he
14 bailed out to come work -- to come work for you all,
15 which is great for him and great for you all actually.

16 CHAIRMAN RYAN: Let me just add, Derek,
17 welcome to the staff of the ACNW. We're thrilled to
18 have you with us and we know you bring a wealth of
19 experience to help us in our work, so welcome aboard.

20 MR. SCHMIDT: So I'm going to try and fill
21 in. If we have to call on Derek for -- oh, okay, we
22 have the slides up, so if we could go ahead a few
23 slides to Slide 10 that starts with intentional
24 mixing.

25 CHAIRMAN RYAN: Thank you, Tyron.

1 MR. SCHMIDT: If we have to call on Derek,
2 we'll try not to do that but he might be able to help
3 out. I'm not as up on it yet as Derek is certainly.
4 So the next slide, Slide 11, just to summarize what
5 was in the draft guidance on soil mixing, we had --
6 before the actual bullets, I'll note that one of the
7 initial considerations that got us looking more
8 seriously at soil mixing and into this guidance is
9 that the License Termination Rule just provides the
10 performance based dose criterion and the criterion is
11 25 millirems per year. It doesn't say anything about
12 mixing good or bad. There's a lot of things it
13 doesn't say anything about in terms of how you get to
14 that dose criterion.

15 Importantly, I mention that because that
16 relates to some of the comments that we got on this
17 from the public and maybe relates to how we might be
18 changing our thinking a little bit on this issue. So
19 in the guidance we had developed a proposed new
20 Section 15.13 in Volume 1 of 1757. In that guidance,
21 we provided a discussion of essentially continuing the
22 practice of using mixing to meet waste acceptance
23 criteria for disposal facilities and actually one
24 thing that I just learned a little bit more, we
25 actually didn't have a good policy on using mixing for

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1 waste acceptance criteria written down. That was
2 something that had developed over years of a small
3 number of licensee requests that we responded to. So
4 this guidance, is, I guess, the first formal guidance
5 on even meeting waste acceptance criteria with mixing.
6 But the practices have been in place and licensees
7 have used mixing for this purpose before.

8 And then our real focus, I guess, was on
9 new guidance on the use of mixing of contaminated
10 soils to meet the License Termination Rule criteria
11 for limited circumstances on a case, by case basis.
12 And the general criteria that we were proposing for
13 the use of mixing was that mixing should be part of an
14 overall approach to cleanup that would include ALARA.
15 It shouldn't just be the only thing that's done at a
16 site. And we proposed limitations on the use of clean
17 soil and on not increasing the footprint of
18 contaminated soils at a site.

19 The guidance also described information
20 that should be included in a decommissioning plan or
21 license termination plan. If we could go to the next
22 slide, 12; for a summary of the public comments on
23 mixing, we had comments from three state agencies, one
24 licensee, a solid waste management industry group, and
25 an industry consultant and on this issue, and perhaps

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1 this was similar to the differing opinions from the
2 ACNW working group at the last meeting, we had both
3 support and opposition to mixing.

4 We had -- the State of New York questioned
5 the need for some of the options and limitations in
6 the guidance and they opposed some of the specific
7 circumstances. They also had some more specific
8 changes that they suggested. The State of New Jersey
9 generally supported the use of intentional mixing for
10 LTR compliance. They provided additional information
11 on their policy and they do allow mixing in some
12 circumstances within their regulations.

13 The State of Colorado opposed the use of
14 intentional mixing and also provided several specific
15 comments. And the solid waste management industry
16 group supported the use of mixing to meet waste
17 acceptance criteria but they opposed the use of clean
18 materials for mixing for leaving material in place for
19 license termination. And then the consultants
20 suggested changes that would actually add more
21 flexibility primarily to the guidance that we had
22 already provided and this goes back to where I
23 started. I think these comments were coming from the
24 perspective that the existing rule doesn't say that
25 you can or cannot use mixing. And I think these

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1 comments were really suggesting that, hey, it's a
2 performance criteria. It should be risk-informed, of
3 course, but there's flexibility and the guidance
4 should be more flexible.

5 The last bullet on this page is something
6 that I think you all might want to talk a bit about.
7 We had two comments, one sort of pro and one a little
8 bit against about the use of mixing to change waste
9 classification and the commentor in favor suggested
10 that the waste classifications for low level waste,
11 Part 61 that that should be allowed, the mixing should
12 be allowed to reduce classification, for example, from
13 Class B waste to Class A waste. And this is where I
14 don't have a whole lot of expertise but a little bit
15 of talking and looking, we didn't see obvious reasons
16 why this is a non-starter but something that you all
17 might want to talk about a little bit.

18 On the other hand, comments that we had
19 from the State of Colorado supported our previous
20 language that it would have prohibited changing
21 classification and also asked for additional
22 prohibitions on changing waste classifications for
23 other types of waste. I guess I probably jumped ahead
24 to the next slide on that one but -- if we could go
25 ahead and move ahead to Slide 13 and talk a little bit

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1 about what we've been thinking about.

2 Many of the comments, we think, don't
3 require significant changes to the guidance, perhaps
4 some clarifications. Some of the comments we will at
5 this point, tend to disagree with and so our responses
6 would explain why we disagree. I guess on the
7 flexibility issue, we certainly understand that the
8 LTR criteria is a dose criteria and that there are a
9 number of different ways to get there. So I think at
10 this point we're open to adding more flexibility to
11 how mixing might be used to meet the LTR criteria.

12 And on the last issue on waste
13 classification, that's one that we're thinking about.
14 In fact, as I already mentioned, that's one that we
15 are most interested in, in you all's input on. I
16 guess a couple other notes on that last one, waste
17 classification, I already mentioned the previous
18 guidance was based on individual letters. The
19 limitation in our draft guidance about not changing
20 waste classification, we think that was just, you
21 know, a holdover from what had been our practice for
22 many years and perhaps a result of the situation in
23 1985 where there was a lot more interest in reducing
24 waste volumes.

25 The world is different now and maybe the

1 situation has changed. So it seems like I think we're
2 open to reconsidering that.

3 CHAIRMAN RYAN: Just for everybody's
4 benefit, the committee has written a White Paper on
5 low level waste as you know, and it's related to this
6 topic and I think you're really speaking to one of the
7 points that will be taken up at a working group
8 meeting in May, and that is that there is two things
9 that really you think about when you think about risk
10 from radioactive material in the setting. One is
11 concentration but also as important is quantity. You
12 know, I can give you a much greater than Class C
13 source that is exempt from regulation because it's
14 just a small amount and conversely on the other end
15 when you talk about mixing of soils, you're talking
16 about very dilute end. So the very dilute end and the
17 concentrated end, things get difficult or challenging.

18 So I think the idea that you're thinking
19 about how to deal with that is very, very helpful.
20 The other part of thinking about disposed material,
21 it's quantity in a disposal site, not the
22 concentration that really sets the stage for a risk
23 informed assessment. So if you go from A to B, B to
24 A, C to B, whatever it might be, that to me, my own
25 view of the world there is that, that's a convenience

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1 for classification relative to packaging requirements,
2 transportation requirements, health physics controls
3 and things of that sort, either in the preparation
4 aspect or in the getting it to the disposal site
5 aspect but once it's disposed, then it really kind of
6 reverts to the quantity being the risk unit of
7 concern. And if somehow we could capture that
8 transition in a smart way that recognizes those
9 things, that would be helpful but that, again, will be
10 coming up in a May working group particular to the low
11 level waste White Paper that we've already provided to
12 the Commission. So -- and I think we would, or at
13 least I would at this point if other committee members
14 would agree, that moving toward that smarter
15 interpretation of those variables in a risk informed
16 way from your standpoint and your guidance and having
17 that, you know sort of match up, perhaps, with the
18 risk informed approach would be a really great step
19 forward, I think. I just wanted to throw that out for
20 you to think about while we're moving along here.

21 MR. SCHMIDT: That's great and I'll
22 acknowledge, you know, I haven't read where you're at
23 on the White Paper. I don't even know if it's
24 available, I guess.

25 CHAIRMAN RYAN: It's available.

1 MR. SCHMIDT: That's not my area, but
2 we'll certainly --

3 CHAIRMAN RYAN: And more will be coming up
4 in May, so you're really not behind the curve on that
5 too much, so --

6 MR. SCHMIDT: Right, which is good.
7 Thanks. I don't know how you all -- it looks like
8 there's a question.

9 MEMBER CLARKE: Go ahead.

10 MR. KOCHER: I apologize because I've come
11 into this game a little later than some of the others.
12 I'm scratching my head about this mixing to meet waste
13 acceptance criteria in a disposal facility. Could you
14 go back to square 1 and tell me what the problem is
15 that you're trying to fix? What kind of waste
16 acceptance criteria can't you meet unless you mix
17 stuff?

18 MR. SCHMIDT: I don't -- since I wasn't
19 involved in developing this, I don't have -- I think
20 what might be helpful is a couple of examples, and I
21 don't have those. Derek, do you know -- sorry to call
22 on your right off but do you know some examples that
23 might help answer that or do you, Chris?

24 CHAIRMAN RYAN: Chris, just for the
25 recorder would you tell us your name and so forth?

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1 MR. MCKENNEY: Chris McKenney, NRC.
2 Yeah, I was involved in the actual -- some development
3 of the BTP and waste classification and mixing back in
4 '92. And what it is, is a lot of it involves not
5 necessarily materials that can be homogeneously mixed
6 but materials that were wanting to be waste average
7 that still retained their characteristics but just for
8 -- in terms of the package were being averaged
9 together and the classification then would change even
10 though there were hotter pieces in there that could be
11 Class C or greater than Class C and some pieces that
12 could be Class B.

13 There was a concern that people would take
14 Class A materials and mix them with Class C's and
15 depending on the size of the -- the size of the
16 canister, you could get almost all the way down to
17 Class A on your average. Even though these are all
18 pieces of metal and the metal isn't actually mixing at
19 all. It's just there are pieces of metal and some of
20 that metal could, in an intruder scenario, that that
21 Class C material which still could be so raised and
22 you would still have an intruder issue that would
23 usually result for a Class C material and you would
24 want that canister treated as it was Class C not Class
25 A from an intruder standpoint.

1 And so there were a lot of those concerns
2 and so what the mixing guidance here was, was that we
3 were taking the '92 branch technical position and just
4 staying with it, with the guidance that was in there
5 and that in the future, for classification in low
6 level waste and then we had public comments about
7 maybe we should revisit that branch tech --

8 MR. KOCHER: I'm sorry, I don't get that.
9 I still don't understand what the problem is you're
10 trying to solve.

11 CHAIRMAN RYAN: Dave, let me help. Just
12 take the PowerPoint example of radiated stainless
13 steel that comes out of the core has a very wide range
14 of induced radioactivity but it's all stainless steel.
15 The practical result of what Chris explained was that
16 at least in the Barnwell license case, the high and
17 the low couldn't be different by a factor of 10, but
18 they could be averaged according to the rules of
19 averaging and in fact, there are experts that do that
20 for utilities all the time.

21 So that's really what it was about. My
22 own thought as you were talking and as Duane was
23 talking, was that for soils and other materials that
24 frankly could be mixed where metals can't, you get a
25 different setting and I think revisiting that setting

1 on the fact you actually can mix, and come up with
2 something that would sample then as a more homogenous
3 mix, is the right way to think about that.

4 So I'm, I guess, just -- and I don't have
5 the full measure of everything you've said in terms of
6 reading about it and thinking about it, but trying to
7 extend the metals rule --

8 MR. MCKENNEY: Everything else, that's
9 what we're saying. We're saying we're willing to
10 relook at that.

11 CHAIRMAN RYAN: Okay, so I think that's a
12 good thing to take soils and other materials that
13 actually do mix in a different way.

14 MR. KOCHER: What waste acceptance
15 criteria can't you meet unless you mix? I don't get
16 it.

17 CHAIRMAN RYAN: Concentration limits.

18 MR. KOCHER: So what? You dispose of it
19 as Class C waste and declare victory.

20 MR. MCKENNEY: Oh, not, they're trying to
21 dispose of the Class C waste in a Class A cell.

22 CHAIRMAN RYAN: Yeah, it's not a
23 straightforward matter of just dispose of it as Class
24 C waste because there's cost issues and, you know,
25 lots of other issues and how you transport it and how

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1 many casks are available to transport Class C versus
2 Class A. I mean, there's a lot of practical issues
3 that you try and optimize. You know, and these folks
4 are expert at all that. They can tell you about it
5 from now until the end of the day, but it's not a
6 simple matter of saying, "Oh, well, we'll just" -- I
7 mean, there are a very limited number of Class C
8 transport units in the country. So you might wait a
9 year to get on the schedule for one, whereas if it's
10 B waste you can ship it this month. That's a
11 practical reality that's very important to deal with.
12 So there's lots of mundane, everyday, you know, work
13 activities that are kind of independent from the
14 ultimate classification of waste that factor in.

15 It's very much an optimization game, as I,
16 you know, recall it. I'd welcome any other comment on
17 it but it's a great question because it is at the root
18 of you know, one element of the optimization. It, in
19 essence, is independent of the disposal question.

20 MR. KOCHER: So it's not really a question
21 of meeting waste acceptance criteria in the
22 abstraction. It's more -- as you pose it, it's more
23 an issue of management of waste in a timely and cost-
24 efficient manner which is a different way of posing
25 the question.

1 CHAIRMAN RYAN: Well, but with the
2 requirement that you know, you go directly to jail and
3 do not pass go if you don't meet the waste acceptance
4 criteria, one of which is concentration. So it's not
5 separate from the waste acceptance criteria
6 requirement. It's integral with the waste acceptance
7 criteria.

8 MR. GILLEN: And there are circumstances -
9 - this is Dan Gillen. Dan Gillen. There are
10 circumstances that, as Duane spoke of earlier,
11 separate from the classification of waste but the
12 mixing of bulk materials like soils where you can mix
13 two levels that now you can dispose of in a non-low
14 level waste disposal facility. Is that correct,
15 Duane? That's what we talked about, some of our
16 previous actions allowed mixing to reach lower levels
17 of contamination, so now they can be accepted at
18 places like Waste Control Specialists in Texas.

19 MR. KOCHER: I'm still just a little bit
20 confused here. The examples, a number of the examples
21 I'm hearing sound like low level waste disposal, not
22 a license termination rule issue. Where is the
23 intersection of these two? I mean, you were talking
24 about, Mike, for example, stainless steel. Fine, but
25 you were talking about disposing it like environ-well

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1 (phonetic). Isn't that just a Part 61, acceptance or
2 not and their license? What's it have to do with
3 1757?

4 CHAIRMAN RYAN: Well, I guess there are
5 clear intersections between disposal and how you
6 decommission a facility. You know, I guess my own
7 view and correct me if I'm wrong, but until you
8 understand what your disposal options are and what
9 your range of materials are and how it matches up with
10 disposal options, you really don't have a working
11 decommissioning plan when you can't separate one from
12 the other, so that's one aspect. But the idea of, you
13 know, preparing materials for decommissioning clearly
14 relate to where are they going to go. So if I'm
15 allowed to mix, and maybe even go to something that's,
16 you know, not to WCS or other outlets and are not
17 classical, you know, ABC low level waste, that's one
18 decommissioning strategy and if I can or can't do
19 that, that switches, you know, what I can and can't
20 do.

21 So they're not unrelated but maybe
22 somebody else can help say it better than I can.

23 MR. NAUMAN: Let me jump in there, Dr.
24 Ryan. It comes down to how clean is clean and how
25 much material do you have to ship offsite. And as you

1 survey the materials, you're mixing in a way trying to
2 homogenize the survey to release from a
3 decommissioning project. And in that process, you
4 come up with these variations of concentration that's
5 acceptable to stay on site or go off site. And if you
6 have materials on site that you're mixing in that
7 process, you end up shipping less off site and leaving
8 more on the site. So it does correlate to the License
9 Termination Rule.

10 VICE CHAIRMAN CROFF: But if it's going
11 offsite, you know, the criteria you've got to meet are
12 the disposal site wherever else it is.

13 MR. NAUMAN: Exactly.

14 VICE CHAIRMAN CROFF: And so a lot of
15 what's in the LTR doesn't make any difference. But
16 coming back to the classification issue, if you're
17 going to leave it on site, what do you care whether
18 it's A or B or C?

19 MR. NAUMAN: Well, you can't leave it
20 onsite.

21 MR. MCKENNEY: No, no, the nexus between
22 the classification system and the onsite issue is that
23 it was trying for a more holistic method of mixing,
24 rules for mixing and considerations of mixing for both
25 onsite and for shipment offsite so that you don't have

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1 -- if someone were shipping, were trying to mix for
2 onsite, that wouldn't have different rules applied to
3 it in the large extent than anything that was for
4 classification because of the fact that you'd
5 otherwise have some issues near the borders of each
6 where you could have mixed it for onsite but now it's
7 not even acceptable for offsite, if the rules were
8 disjointed.

9 I mean, from a holistic standpoint to try
10 to have a mixing -- mixing rules or bounds to be more
11 appropriate along the realm of possibilities because
12 somebody could mix on site and then make -- because of
13 other decisions, all of a sudden make a decision to
14 ship it all off. Now, it still has to somehow be
15 appropriate to be accepted now and if that wasn't
16 considered in the rules, in the first place, then you
17 might have an issue.

18 And the thing was, this was to keep as
19 much as possible in mind that we do have rules for
20 shipping offsite. We weren't actually changing those
21 to a large extent at all in the BTP but we did mention
22 them and that's why the commentators mentioned them,
23 brought them up again about the fact that maybe we
24 should revisit those. And those wouldn't be revisited
25 from the point of view of 1757 has to be reviewed but

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1 from a position of low level waste, but it is a point
2 of comment that was on 1757 and so we were bringing it
3 up here.

4 MR. SCHMIDT: This is Duane Schmidt again.
5 I think the only thing I was going to add, you know,
6 to some extent I think you're right, whatever is left
7 on site, you don't care what the classification is.
8 I mean, they are related but I think part of is was
9 just a practical decision that while we're focusing on
10 LTR in NUREG-1757 we have this related guidance that
11 we felt needed more exposure. And so I think part of
12 it is a practical here's a way to get this guidance a
13 little more formalized somewhere in our guidance
14 system. I mean, we've done that for other issues as
15 well that aren't exactly license termination but are
16 related. I don't know if that helps but --

17 MR. DAROIS: I have a question in this
18 regard. Chris, you mentioned you're going for a
19 holistic approach which implies that there's going to
20 be some changes or reinforcement of the branch
21 technical position in regards to waste disposal and
22 waste classification. Is there going to be a major
23 change in the philosophy?

24 MR. MCKENNEY: I don't think we're going
25 to be making major changes. I mean, it's just more of

1 the fact that that is out there and there is some
2 nexus between when waste offsite has to be considered
3 so that we don't have a big disconnect between the
4 methods and rules for mixing or the guidance for
5 mixing.

6 MR. DAROIS: Okay.

7 MR. MCKENNEY: I should say not rules.

8 MEMBER CLARKE: Duane, did you have any
9 more on that topic? Bill, did you have a question?

10 MEMBER HINZE: Well, yes, I did and this
11 goes back to the comment made by the State of Colorado
12 and I have a sense that a couple of the other agencies
13 brought this up as well. And that is the concern that
14 intentional mixing may not really be -- may be
15 inconsistent with other agency or state regulations.
16 What -- can you expand on that a bit on how you're
17 going to be treating that?

18 MR. SCHMIDT: I guess I'm not sure what to
19 really say at this point. You know, we're really
20 trying to work on guidance to implement our regulation
21 and part of the issue, really goes back to that our
22 regulation is different from, for example, EPA
23 regulations. I'm not entirely sure what -- how we're
24 going to respond to that and what we would do, if
25 anything, but --

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1 MEMBER HINZE: Well, have you considered -
2 - have you in any way been involved with discussions
3 with EPA or any of the other agencies on the
4 intentional mixing issue?

5 MR. WIDMAYER: This is Derek Widmayer,
6 currently with ACNW staff if I don't blow the answer
7 to this question.

8 (Laughter)

9 MR. WIDMAYER: I think Dr. Hinze, we were
10 basically following the direction that we got from the
11 Commission to go ahead and include this flexibility in
12 the guidance. And I think we would be responding to
13 those state agencies acknowledging that we may be
14 moving in a new direction but that's, you know, what
15 we were advised to do. And I wanted to point out that
16 we still were considering this to be just a limited
17 applicability of this, you know, a case where it was
18 the last resort. It was the only solution to actually
19 terminating the license would be to mix and let it say
20 on site.

21 MEMBER HINZE: How do you get that across
22 to the user of the NUREG, that limitation?

23 MR. WIDMAYER: Well, I think we've tried
24 to point that out a number of times up front and also
25 in the guidance. But I think we did get some comments

1 indicating that -- and this is what Duane was alluding
2 to before, that even that limitation isn't necessary.
3 That the interpretation by this one commentor was, the
4 Commission said to go ahead and utilize this approach
5 and as long as you do performance based and risk
6 informed, that you know, it will turn out to be, you
7 know, very few opportunities to use it but it could
8 still be something to use.

9 MEMBER CLARKE: Mike, you had a question?

10 CHAIRMAN RYAN: You know, I mean, when you
11 hear about intentional mixing, I've heard, you know,
12 just off-handed ad hoc comments that people are
13 concerned that it's dilution of waste. That's really
14 the root of it. And I think it goes back to what we
15 talked about earlier that I mentioned and I'm
16 soliciting your opinion, Derek. If you look at
17 concentration, that's one component of a risk-informed
18 view, but you've got to look at quantity, too, because
19 it's quantity in a disposal setting or in a what's
20 left behind setting, you know, material left on site
21 that really gets you to think about risk in a better
22 way from both points of view.

23 So I think if you -- and the challenge, I
24 guess is that as you think about those two components
25 and try and deal with both, that will help you, I

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1 think, address the fact that it's really not dilution
2 in the sense of making something go away. It is
3 looking at two aspects of the risk. One is quantity
4 and one is concentration, both of which inter-relate
5 as we've talked about.

6 And, you know, the way I think about it is
7 the extreme; zero volume and a pico-curie or a nano-
8 curie, 100,000 cubic yards and a curie or something.
9 You know, and you can begin to do those thought
10 experiments that I think can help you explain what
11 your view of the world is there that might be helpful
12 at trying to talk about how to use it. So I urge you
13 to think about concentration and quantity as the kind
14 of key that unlocks that door a little bit. Any
15 thoughts? Does that make sense? Is that on the right
16 track?

17 MR. SCHMIDT: I think that -- this is
18 Duane Schmidt. I think that makes sense, Mike. When
19 you started out, I was almost going to disagree but
20 recognizing that, you know, it depends on the rate of
21 nuclides you have and therefore, the pathways that are
22 important, there certainly are cases where
23 concentration may be most important, you know, for
24 example, material left on the site that's a gamma
25 emitter, that may not end up being a ground water

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1 issue.

2 And as you say, there certainly are cases
3 where the other would be true, that the quantity is
4 what's most important.

5 CHAIRMAN RYAN: And fair enough. I mean,
6 I -- yeah, fair enough. I mean, that's a good point.

7 MR. SCHMIDT: But we do recognize that and
8 that is that's a complication of when can this be
9 allowed and if it gets back to doing a good solid dose
10 assessment, performance assessment.

11 MR. WIDMAYER: Dr. Ryan, I think one of
12 the things that we discovered when we were doing the
13 Commission paper is that there certainly is a
14 negativity associated with dilution mixing something
15 to, particularly in the EPA space, you mix something
16 to avoid treatment. That's clearly not allowed, and
17 in this case, we're trying to make the point that that
18 isn't what's happening. We're still going to be
19 applying all of the criteria for safe disposal. We're
20 just suggesting that, you know, there's a different,
21 more risk informed approach that could be use -- maybe
22 utilize space at a different disposal facility or
23 whatever the trade-offs are. Nothing is being
24 avoided.

25 CHAIRMAN RYAN: It makes a lot of sense.

1 I just think it's a matter of how you treat these
2 variables and explain them so people recognize you're
3 really not intending to take something out of a
4 legitimate treatment or, you know, disposal pathway
5 but you're really recognizing two aspects of the risk
6 you're charged with managing and it's quantity and
7 concentration. I think we'd encourage that.

8 MEMBER CLARKE: Okay, let's take, if we
9 have, a couple more questions and I'm feeling a need
10 to move to the next topic. Any of the panel, do you
11 have additional questions? Ruth? No? Okay, thank
12 you, Duane. Chris McKenney has joined us and the next
13 topic is reasonably foreseeable land use scenarios.
14 If you could take us to Slide 6.

15 MR. MCKENNEY: One of the topics in the
16 LPR was the issue of expanding the flexibility we have
17 and what sort of land uses and scenarios that people
18 should be using for the -- or can use for the License
19 Termination Rule. So for the scenarios which we
20 entitled Reasonably Foreseeable Land Use, we discussed
21 this in June, I think it was June last year with you
22 guys, and had discussed this at RD Commissioning
23 meeting out there and overall concepts which are on
24 Slide 7, please, the -- we had the -- we basically
25 modified or expanded some of the current sections of

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1 NUREG-1757 Volume 2. Mostly it was a modification of
2 tone in the guidance from alternate scenarios being
3 the exception to site specific scenarios being a valid
4 area of flexibility.

5 In other words, what is the -- what is the
6 most likely uses of the land in the near future? We
7 had 1,000 years of analysis time period and the way
8 the guidance was written, it seemed like you had to
9 assume that you had to base your compliance on any
10 scenario that could occur over 1,000 years rather than
11 taking a more reasonable view and it was tending to be
12 then, being forced to go to, you know, farming
13 situations and what are potential urban environments
14 and everything else if you go with the view of
15 anything in 1,000 years and so the Commission decided
16 that we should look at what is based on a more
17 reasonable set of land uses for a site, but back that
18 up with some analysis of unlikely scenarios so that we
19 know the robustness of what the range of doses would
20 be on a site and making the decision whether a site is
21 reasonable to be released for unrestricted use.

22 We had five organizations that gave us
23 public comments, three states and two private
24 organizations. We had some of the comments were
25 supportive of the policy. We had no comments that

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1 said this was absolutely the wrong way to go. We had
2 a few comments were on editorial changes or slight
3 confusions, such as -- this is Slide 8, yeah, I'm
4 sorry -- that there were -- in revising the guidance,
5 without changing in essence the policy as set forth by
6 the Commission.

7 Slide 9, please. A couple of commentors
8 confused the time frame of analysis for the time frame
9 we were discussing for scenario development. They
10 thought we were shortening the analysis time all of a
11 sudden to 100 years in this from 1,000 years on the
12 rural. Obviously, those sections of the guidance need
13 to be buffed up to try to make sure that people in the
14 future don't get confused, similarly.

15 And the one other commentor which was the
16 solid waste organization, commented that they viewed
17 that we should be putting deed restrictions or other
18 devices on any site that used reasonable -- that used
19 reasonably foreseeable land use scenarios as a
20 compliance measure. We're going to be responding to
21 that comment. It was discussed in 69. However, it's
22 the robustness of the analysis with the unrestricted -
23 - with the unlikely scenarios being analyzed and other
24 measures -- and the decision to release the site that
25 we don't need to have the deed restrictions.

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1 First of all, deed restrictions is counter
2 to unrestricted release in the first place. That
3 we'll be responding to the comment but not actually
4 changing the policy or approach. And that's it.

5 MEMBER CLARKE: Okay, Chris, thank you.
6 Eric, would you like to start?

7 MR. DAROIS: I'll only mention that I
8 think this would be certainly a useful tool looking
9 retrospectively at where we've been in some of these
10 decommissioning projects but just a little bit of a
11 footnote is -- and we seem to get a little bit hung up
12 on complying with EPA side of the house in these site
13 restrictions, site releases. And we only wish that
14 they might see the world in a similar way. So that's
15 all I've got to say.

16 MEMBER CLARKE: Tom?

17 MR. NAUMAN: No comment at this time.

18 MEMBER CLARKE: Eric?

19 MR. ABELQUIST: I think the only comment
20 I would have at this point is in order to establish a
21 level of robustness, as you stated Chris, other
22 scenarios would be looked at. Is it staff's intent to
23 provide additional guidance on just how much
24 robustness is going to be expected once a licensee
25 looks at what is the reasonable scenario over 100 year

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1 time frame and then they look further and see, okay,
2 other scenarios need to be developed.

3 And I think the view is going to be it's
4 additional work that really isn't going to address the
5 initial development of DCGLs. It's sort of performed
6 just so that the staff has additional assurance that
7 a robust analysis was performed. And so I think
8 there's going to be this drive to really keep the
9 other scenarios that are looked at to a minimum. And
10 so I think the comment I have is, can you provide
11 better pounding guidance on just how much robustness
12 the staff is looking for?

13 MR. MCKENNEY: I mean, yeah, it all
14 depends first of all that a number of alternative
15 scenarios can always be not actually analyzed in
16 quantitative fashion but qualitative because you can
17 discuss how it's different from the base scenarios
18 that you were doing, how are the pathways potentially
19 effected.

20 Also we do discuss how you can use
21 bounding analysis, you're unlikely -- you know, as
22 soon as you've got possibly an assurance that you've
23 covered most of the pathways and other things that
24 it's really difficult in a generic sense to say
25 exactly how much robustness you'll need because it all

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1 depends on how far a specific case goes or how much
2 extra analysis goes. We've had some sites who have
3 done it and then they've, you know, done, you know,
4 suburban resident or something like that on the side
5 to show what sort of doses those would be if that
6 occurred at the site when they were going for
7 industrial.

8 That's -- that was part of their analysis
9 and they just showed it -- they just did the analysis,
10 ran the basic runs and supplied it. From the
11 company's point of view, it can be considered as those
12 are questions that were going to be raised by the
13 public anyway would be, you're going with this land
14 use, what is the doses going to be if this was to be
15 used as something else? So somebody should, you know,
16 sort of forward thinking of what could be happening,
17 but or to answer questions.

18 We'll look at trying to get more guidance
19 on that but that can always be strengthened, but it's
20 sort of difficult when you start how much of a tune of
21 if then are you going to write to say what is the
22 bounding scenario you must use or how much is it to be
23 used.

24 MR. ABELQUIST: Thanks.

25 MEMBER CLARKE: Tracy?

1 MR. IKENBERRY: I don't have any more.

2 MEMBER CLARKE: David?

3 MR. KOCHER: This strikes me as a really
4 thorny problem. I gather that you have a default set
5 of soil guidelines that people can use without
6 question. These are the ones that you publish in the
7 Federal Register. But I guess I wonder two things.
8 In making a decision about terminating a license and
9 releasing a site, how would these other analyses to
10 test robustness be factored into a decision? I mean,
11 that's just something to ponder. I don't expect a
12 clear answer to that right now.

13 And I also wonder how this relates to
14 ALARA considerations because if you base -- for
15 example, if you base some idea of ALARA in terms of
16 how much is reasonable to remove from a site and ship
17 to a low-level waste facility, say, if you do an
18 expected scenario and you conclude that your doses are
19 less than a millirem per year, say, in that scenario,
20 you would say it's not worth spending 10 cents to move
21 any material offsite. But if your resident farmer
22 scenario indicates 100 millirem, what then, how do you
23 make a decision in a realm like this?

24 Maybe you want to lay out some kind of
25 hierarchy for how to do this or you certainly want to

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1 have public buy-in to any scenario, any future
2 scenario you come up with which is not nearly as
3 restrictive of some others that are plausible. I'm
4 going to think about this some more, but this strikes
5 me as not a very easy issue to deal with.

6 MR. MCKENNEY: The first part -- actually,
7 we'll go backwards on this. The thing you raised
8 about public buy-ins, that is part of the guidance
9 about you should be working with stakeholders on what
10 is the reasonable land uses for the site you're
11 discussing, site, it's not just the licensee. It
12 should be showing that they have some public buy-in
13 with the various stakeholders on what's possible
14 choice -- that they've discussed it with what possible
15 choices are there and what -- and their justification
16 for their land uses.

17 Secondly, for ALARA, if we go back to
18 actual ALARA, is that you should not be using bounding
19 scenarios as your basis for making any ALARA
20 determinations. You should be using the expected
21 case. That that is -- that otherwise you'd make
22 faulty ALARA considerations, faulty cost benefit
23 analysis. I mean, basis for ALARA is cost benefit,
24 the theory and cost benefit analysis to always use
25 best estimates for all your terms, not to use bounding

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1 for any one of them, which is one of the problems with
2 actually using -- in the past, with using a lot of
3 resident farmer or other scenarios has lent it the
4 other way for cost benefit analysis.

5 So, I mean, there is consideration. I
6 mean, we are doing the -- we do want to see the
7 licensees are reaching out to see what are the
8 possibilities and it's not just an in-house think tank
9 of what can my land be used for and that, yes, there
10 is some difficulties on what is -- if the dose -- at
11 the DCGL, remember, we're talking about decision
12 making by the agency on whether to go forward with a
13 DP is if the site was contaminated wholly at the DCGL,
14 what would be doses or unlikely scenario. Now, I
15 mean, that's -- and where that falls in comparison to
16 25, but, you know, in real side is that no site is
17 actually contaminated at the DCGL the people request,
18 so the actual doses even in the unlikely scenario is
19 much lower.

20 CHAIRMAN RYAN: Chris, it seems that
21 without really getting to a probability kind of
22 thought, you're really sort of inching your way toward
23 it. How likely is something to be -- you know, how
24 likely is the, you know, extreme scenario, the low
25 probability or higher dose scenario to be and I think

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1 built in, as you've pointed out on DCGLs and other
2 thinking, you're sort of hedging the bet on it which
3 is fine. I mean, I'm not suggesting you should start
4 cranking up the PRA codes to do all this, but Dave, to
5 think about your question, I think you've got to think
6 about the fact that bounding cases mask risk. They
7 don't tell you anything about risk.

8 And without having some insights from the
9 average case to the nominal case on what realism is,
10 that's to me where it starts which I think is what the
11 guidance is aiming at. So you've got to be careful,
12 and I agree with Chris' comments, that ALARA just
13 isn't -- doesn't make any sense. ALARA is a
14 comparison of two or more things not an absolute.
15 Lots to talk about, but I mean, it's an interesting
16 dimension. Thanks.

17 MEMBER CLARKE: Dave, any other questions?
18 No, I was going to go around this way. I just wanted
19 to make sure Dave was finished. Bill? Ruth?

20 MEMBER WEINER: I'd like to follow up on
21 some of the comments that were made. One of the
22 things we heard at the workshop that we went to was
23 that if you can meet the backyard farmer, that's what
24 the licensee is going to use because it's simpler,
25 it's cheaper and that's what they're going to do.

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1 What are the optics, do you think of somebody saying,
2 "Okay, all of these sites met the bounding case, but
3 we can't meet the bounding case, so we're going to use
4 a realistic scenario". I know that the guidance says
5 you work with the stakeholders but it seems to me that
6 that is a dichotomy that you're going to have to face.
7 As long as people can meet -- as long as there are
8 sites that can meet the backyard farmer's scenario,
9 that's going to be the hallmark of what you do and
10 related to that question is how often do you think or
11 how many sites do you think -- what's the sort of your
12 guess of the frequency in which a realistic scenario
13 would have -- that is not bounding, would have to be
14 used because those are the only circumstances that I
15 can tell under which it would be used.

16 MR. MCKENNEY: There's a little bit more
17 consideration but generally that's true. However,
18 it's similar to the fact that we have screening
19 criteria out there and the same licensees who are
20 doing site-specific analysis are -- would be in the
21 same boat as well. Everybody else meets the screening
22 criteria, then why don't you?

23 The flexibility in the dose standards
24 leads to the fact that different sites get different
25 concentrations. That's just the way it is. The

1 method of analysis may be different at different
2 sites. That's the difference between a dose system
3 and a concentration based standard.

4 The State of California has had to deal
5 with that quite a bit because that is the basis for
6 most arguments against the -- in the State of
7 California under their licensing issues. There's been
8 arguments about this site is used, this may be used --
9 we haven't seen that as much in ours about people
10 saying well, this site did it this way with this code
11 and they got a value of this, you should do the same
12 because you have the same radio nuclides. We haven't
13 seen that as much and we haven't seen it pulled in as
14 saying, well, you know, Site XYZ or at least we
15 haven't seen it coming into us.

16 I have no idea what the licensees have
17 seen from their own, you know, their local public and
18 their local -- if they have boards or whatever, but we
19 haven't seen too much of that that has been serious
20 opposition with the argument being based on the fact
21 that another place, another site was approved with a
22 different number and that they -- and this one is
23 getting away with everything by having a number 10
24 times. We have not seen many arguments along that
25 line.

1 MEMBER WEINER: How do you handle them
2 when you do see them?

3 MR. MCKENNEY: Let me explain again that
4 with a performance based standard, there are a number
5 of factors that go into it, including what is the
6 scenarios and what is -- not only that, I mean,
7 there's other factors that go into it with Kd
8 chemicals, the site, the mixture of the radio
9 nuclides, possibly the site, depending on the way
10 they're doing analysis, which sources are contaminated
11 at the site, which ICRP factors they're using, all
12 those sort of things can lead to different DCGLs for
13 the same radio nuclides, so we just try to describe
14 that to them and try to make them understand that it's
15 -- the risk is being -- the risk is trying to be or
16 dose is trying to be held below 25 millirem but you
17 don't -- but that can lead to different concentrations
18 in different situations.

19 MEMBER WEINER: Thank you, that's helpful.

20 MR. GILLEN: Dan Gillen. I just wanted to
21 mention in response to Ruth about you seem to indicate
22 that well, there's not very many of these that would
23 come in and not use just a bounding resident farmer.
24 We actually have, I don't know maybe Chris can give
25 site specific examples, but I'm pretty sure that you

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1 know, we've had a number of cites already come to us
2 and use the more reasonable scenarios, SE Holdings,
3 MD&R, Kiske, we did that one ourselves. Those are
4 examples that come to my mind, anyway.

5 MEMBER WEINER: Thank you, that was
6 actually my question so you have used this --

7 MR. MCKENNEY: Well, we've been using this
8 on a case-by-case basis before we even made it
9 guidance, pretty much, we had, which is sort of the
10 basis which -- which is discussed in SECY-0369 about
11 some of the ones that we had already sort of went this
12 way because of case specific issues that allowed us to
13 be in a position to go in this approach. And so this
14 was more of a making this the formal policy rather
15 than the case by case policy.

16 MR. SCHMIDT: This is Duane Schmidt. You
17 might guess and correct me, Chris, you know at
18 headquarters, we deal with the more complicated sites
19 and it could be out of the ones we deal with, you
20 know, roughly half, I don't know, somewhat of a guess,
21 but a good portion of those complicated sites end up
22 using, you know, scenarios different than bounding
23 ones. So we would be talking about a few 10s of sites
24 that we deal with.

25 CHAIRMAN RYAN: You know, I guess let me

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1 add a view that I think when you think about the NRC
2 doing this, it's fairly straightforward because
3 there's always access to all the folks that are
4 involved either at a region or at headquarters, but
5 when you notch it down to the sites that will be
6 decommissioned through an agreement say, you know,
7 having the robustness and guidance, and the clarity of
8 direction across the guidance to use realistic
9 scenarios and how that ought to be done as opposed to,
10 you know, some single reference scenario which, you
11 know, I think, frankly, can mask risk as opposed to
12 elucidate risk is real important that it's in the
13 guidance. You know, and you look at the things that
14 you mentioned, Chris, of KD's and other geo-hydrologic
15 types of questions, the backyard farmer scenario, just
16 doesn't hold up, I think, across that spectrum of
17 potential sites.

18 So having flexibility in the guidance and
19 actually have the guidance say, you know, how you
20 develop your own scenarios, which of course, it does
21 and can be strengthened in that regard is pretty much
22 the right way to go. But, you know, I want to just
23 add the dimension, it's not just the NRC that will be
24 using this guidance. It's the broad spectrum of
25 agreement state licensees across the country and in a

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1 wide variety of settings.

2 MR. MCKENNEY: That is correct; however,
3 for -- from the point of the agreement states, at our
4 agreement state meetings, they tend to have much --
5 they have a lot less of the complicated large earth.
6 Generally, our sites are more complex, tend to be
7 larger contaminated sites and luckily they tend to be
8 in proportion which is more like the regions and that
9 most of our sites are simple, but yes, they could --
10 I mean, that's also for the guidance, it allows them
11 to go forward on a site specific basis.

12 CHAIRMAN RYAN: Yeah, I think, you know,
13 whether the site is complex or relatively simple,
14 having that guidance flow to them in a clear and --
15 you know, and detailed fashion gives them, you know,
16 a lot of support that, frankly, a lot of them can't
17 afford to develop internally on their own merits, so
18 it's good that it does address the spectrum, which is
19 just what we're talking about. That's great.

20 MEMBER CLARKE: Dr. Larkins, did you have
21 a question? Are there any questions from the staff?
22 We do have one more topic before we're scheduled for
23 a break and that is removal of material after license
24 termination. We have Tom Youngblood presenting that.

25 MR. SCHMIDT: Actually, that was John

1 Buckley and I. Tom is on the next --

2 MEMBER CLARKE: I'm sorry, he's on the
3 next one.

4 MR. SCHMIDT: So this is, we're there.
5 And I believe this is an issue that we did not talk to
6 you about in the June meeting. Hopefully, it's not
7 too new but this was in the draft guidance and the
8 real issue that we were trying to get at here was sort
9 of distinguishing criteria that may be used by
10 licensees to release material from an operating site
11 or from a decommissioning site, release materials from
12 that site versus criteria that might be used for
13 materials that may remain on the site and in
14 particular for materials remaining on a site at
15 license termination that could then be removed after
16 license termination.

17 And you know, for removal of solid
18 materials during operations, we've got REG Guide 1.86
19 for surface contaminating materials. For
20 volumetrically contaminated materials we've been sort
21 of consolidating around a criterion that's acceptable
22 of a few millirem per year when licensees apply under
23 NCRF 20.2002. So that's the one hand of releases of
24 materials during operations.

25 At license termination, materials that may

1 be left on site are subject to the License Termination
2 Rule and so there can be some inconsistency because
3 there are certain types of materials that could fit
4 into either category, materials that could be released
5 before termination or could remain on site and later
6 be recycled or something else to move off-site.

7 One example that I think of is a metal
8 building that might be on a site. You know, that's a
9 -- a structure like that would be relatively easy for
10 a licensee to disassemble, decontaminate as necessary,
11 scan and release it during operations or during the
12 decommissioning process, but they might also choose to
13 leave that structure on site to develop DCGLs for that
14 structure scan it appropriate but that building could
15 remain on site at license termination and then after
16 the license is terminated, you don't know what the
17 next owner of that property might do. So that
18 material could actually still end up being removed
19 from the site being recycled as scrap metal or reused
20 somewhere else.

21 So there is in some sense an inconsistency
22 and that's what we were trying to clarify, I guess,
23 with this guidance. There was little bit more in the
24 slide there but since we hadn't talked about this one.
25 Public comments on -- moving to the next slide, public

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1 comments on this issue, we didn't really get a whole
2 lot. We had a couple of -- a small number of
3 comments, a couple requesting some clarification of
4 the approaches that we described. There was one
5 commentor that wanted concentration values instead of
6 a few millirem criterion. And there was, I guess some
7 confusion about what does criterion would apply to
8 materials that are left onsite at license termination
9 where they could be removed after termination and the
10 doses had to address, say an offsite use scenario.

11 And our path forward, we don't think that
12 there are any significant substantial changes that we
13 need to make to the guidance. We're going to look at
14 the comments and see if there's some things that we
15 can clarify to eliminate the future confusion.

16 I guess that's really all I wanted to say
17 on this issue. We didn't get a whole lot of interest.
18 It was a little bit surprising but we really didn't in
19 terms of public comments. So I'll give it back you
20 all.

21 MEMBER CLARKE: Thank you. Bill, do you
22 have any questions?

23 MEMBER HINZE: No, I'll pass.

24 MEMBER CLARKE: Bill?

25 CHAIRMAN RYAN: No, thanks.

1 VICE CHAIRMAN CROFF: One question; if you
2 used the reg guide in 2002 before license termination,
3 why not just use them after license termination as
4 opposed to creating new language in the 1757?

5 MR. SCHMIDT: The Reg Guide 1.86?

6 VICE CHAIRMAN CROFF: Right.

7 MR. SCHMIDT: I guess the difficulty is
8 that -- well, I guess in most cases if a licensee
9 proposed doing that, that would probably be
10 acceptable, but the license termination rule says that
11 those criterion for unrestricted use is 25 plus ALARA,
12 that can give you different numbers than are in the
13 reg guide. So licensees certainly have flexibility
14 and some licensees have chosen to develop their own
15 DCJLs for buildings especially. Does that -- is there
16 more question, I'm not quite sure I answered your --

17 VICE CHAIRMAN CROFF: Well, I'm not sure
18 it did either. You've got --

19 CHAIRMAN RYAN: Maybe I can help you.
20 What's the difference between a 2002 determination and
21 a License Termination Rule determination for the same
22 pile of material?

23 MR. SCHMIDT: The 2002 determination would
24 be if it would be probably for the pile of material to
25 be released from the site prior to actual license

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1 termination.

2 CHAIRMAN RYAN: Well, what's the criteria
3 difference? I mean, is it the same does number and
4 all that -- I mean, that's what I think, Allen is
5 trying to get at. Why are they different?

6 VICE CHAIRMAN CROFF: Right, why have two
7 different things?

8 MR. SCHMIDT: That's a good question.
9 That's where we have ended up. I mean, we've -- it's
10 been sort of a slow evolution in our thinking but I
11 guess we've sort of been there for several years. On
12 20.2002 for operating facilities, the doses in general
13 should be a few millirem for materials that are
14 leaving the site. The regulation itself does not
15 require that but what we had been saying and what
16 we've put into the -- through some other guidance,
17 said that if licensees requested 2002s for offsite
18 disposal at doses of a few millirem per year, that
19 would be acceptable.

20 So we sort of evolved to that over really
21 a couple decades almost. You know, if push came to
22 shove and a licensee said, "I want to send material
23 offsite at 25 millirem per year", the regulation could
24 allow that. We don't totally like that, we would
25 prefer lower doses for materials that are being sent

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1 offsite.

2 CHAIRMAN RYAN: When you say "sent
3 offsite", sent offsite for what, disposal or reuse or
4 only reuse or --

5 MR. SCHMIDT: Yes, but the majority of the
6 requests we get, I think, are for disposal in, for
7 example, municipal landfills, sometimes hazardous
8 wasteland landfills. There are the occasional other
9 situations. I mean, there's a request in place now
10 that's sort of an after the fact something that wasn't
11 -- that I guess, the licensee wasn't totally aware of
12 where concrete that was slightly contaminated was
13 moved offsite and now is, I believe, at a commercial
14 establishment just serving as a barrier, I guess.

15 Most of them really end up as disposal in
16 landfills but there are a few other cases that come up
17 and it could be -- under 20.2002, a licensee could
18 request any use. I guess another -- one of the other
19 examples that was a recent proposal that was approved
20 was use of I think it was filter cake, I'm not sure of
21 the exact material at a Cabot site in Pennsylvania,
22 low concentrations of, I believe it was uranium, but
23 they wanted to use -- the material fit into use in
24 making cement, and so they planned to send the
25 material to a cement production plant, I guess, and

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1 that was approved. So that's not exactly disposal,
2 that's reuse. That one is pretty low concentrations
3 after the cement was produced.

4 CHAIRMAN RYAN: Do you think it makes
5 sense to try and address the differences between 20-
6 2002 and the LTR in this guidance? It would sure help
7 people sort out where they are.

8 MR. SCHMIDT: Can you -- in what way would
9 it --

10 CHAIRMAN RYAN: Well, I mean, 2002, it's
11 not just the fact that we're talking about material
12 before or after the License Termination Rule. That's
13 just the timing, but there's very different criteria
14 in thinking on the two.

15 MR. SCHMIDT: Right.

16 CHAIRMAN RYAN: And I think it's important
17 to tell people in the license termination game why
18 2002 either can be used or can't be used or should be
19 used or shouldn't be used in one setting or another
20 and maybe some of the case by case work you've done
21 already would help you document that at least a
22 little. And I recognize this is very much a work in
23 progress because you're doing these things actively
24 and currently, but it is a good question to say why is
25 2002 different than LTR?

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1 MR. SCHMIDT: Right, and I think that's a
2 good suggestion. I know we've got a little bit on
3 that in the guidance, but I think that's a good
4 suggestion that might be something to beef up there.

5 CHAIRMAN RYAN: You know, folks at this
6 table, I think, have wrestled with it some already
7 but, again, new entrants and again, I'm thinking of
8 the folks that are walking into termination questions
9 for the first time. They're going to hit the wall of
10 confusion there if they don't have some kind of
11 detailed guidance laid out. So that might be a way to
12 help clarify for folks what the differences are and
13 why they're there and how each one is used and so
14 forth.

15 MR. SCHMIDT: Right, I think that's a good
16 suggestion.

17 CHAIRMAN RYAN: Okay, thanks.

18 MEMBER CLARKE: Ruth? Let's go the other
19 way, Dave Kocher?

20 MR. KOCHER: Hypothetically, I suspect the
21 only way that you might really run into trouble here
22 and this is, I suppose, not likely to happen, suppose
23 some piece of contaminated equipment or part of a
24 building, if left in place, could meet the License
25 Termination Rule criterion but by some means or other,

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1 if it were then after the license was terminated, the
2 owner of that property sold this to somebody else and
3 he used it for some purpose, not disposal that led to
4 a dose higher than the License Termination Rule
5 criterion, that could be a problem. I don't suppose
6 it's likely to happen but it may call for some thought
7 about what kinds of things would be permitted to
8 remain on site even if -- even if the License
9 Termination Rule criteria were met, I don't know. You
10 probably just have to give some thought to this
11 hypothetical situation to see if it's at all
12 plausible. I don't know.

13 I mean, sculptors do funny things with
14 stuff, you know.

15 MR. SCHMIDT: With found objects. That's
16 a good point and I think we have addressed that at
17 least somewhat in the guidance. The options that we
18 presented push licensees towards removing before
19 license termination, materials that are easily
20 removed. So there's a push there, at least, in the
21 guidance and we also have a discussion in cases where
22 you know, a licensee knows that -- and maybe there's
23 a key word there, knows that a material that is going
24 to be left on site at license termination could be
25 removed and used for something else, that should be

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1 considered. You know, potential offsite uses should
2 be considered and we have said a little bit about that
3 in the guidance.

4 You know, you can't -- and maybe that's
5 part of what you're thinking. You can't always tell
6 how somebody is going to reuse materials.

7 MR. KOCHER: And it's not your job to
8 think of every eventuality, either, I don't believe,
9 but it's just something worth hearing.

10 MR. SCHMIDT: Right, right, but, yeah, I
11 think -- I mean that's part of what's difficult and I
12 think that's part of what causes you know, confusion
13 with people looking at this, people look at it and
14 say, "Well, gee, this could get taken offsite
15 afterwards", are you really addressing that?

16 I guess I feel like we've got something in
17 the guidance and we are trying to take that into
18 account. I don't know if we've had good examples yet
19 come out of this.

20 MR. KOCHER: On this issue of consistency
21 between offsite disposal, those criteria under 2002
22 and then the License Termination Rule criterion, if as
23 you say, the idea here is that disposal in a sanitary
24 landfill is a desired end point for some of this stuff
25 rather than a licensed low level waste facility, I

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1 don't see that you want the criteria to be the same.

2 I think the criteria should be low at a
3 landfill because there's other stuff there. It's not
4 a hazardous waste site.

5 MR. SCHMIDT: Right, that's a good point.
6 And I think that's -- you know, that relates when we
7 were working on a clearance rule, I don't know if I'm
8 allowed to say that word, but that was part of the
9 consideration that went into, you know, looking at
10 lower dose criteria for clearance, for releases during
11 operations, that you've got lots of different releases
12 over time and people may be exposed to multiple
13 materials, I mean, a similar type of concept, I think.

14 MEMBER CLARKE: Tracy?

15 MR. IKENBERRY: I just had a question
16 regarding the use of the few millirem criteria that
17 you're using. Has that been -- is that based on or
18 couched in terms of ALARA? Is that where that's come
19 from in reducing from the 25 millirem or -- I mean,
20 that would seem reasonable to me that if it were done
21 that way, but I'm just curious about that.

22 MR. SCHMIDT: I'm not positive where it
23 exactly comes from. I think part of it comes from the
24 thought that people might be exposed to multiple
25 releases, multiple batches of materials. I'm not sure

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1 if ALARA worked into that or not. I guess I'm not
2 sure. I'd have to go back and look at some of the
3 documents.

4 CHAIRMAN RYAN: Duane, couldn't you
5 speculate, too, that that -- and it's qualitative,
6 which I think is an interesting point. It's a few
7 millirem. It's not one or two or 2.76 or any specific
8 number, but it is consistent with the range of values
9 you see for disposition of solid materials worldwide.
10 You know, it's not inconsistent with that. If you
11 look at EU Safety Directive 6, or you know, any of the
12 other international guidance, it's kind of in that
13 range. So I think there's some consistency there,
14 Tracy from that standpoint which is helpful and it's
15 not inconsistent with the materials that were
16 developed on clearance here but, you know, are not
17 just on hold at the Commission's direction citing the
18 higher priorities, but recognizing as they did in
19 their own comments in the quality of the work, so
20 there's a consistency from that standpoint, at least
21 that's my thought. What do you think, does that seem
22 reasonable?

23 MR. SCHMIDT: Yes, I would agree with
24 that, although one thing to mention, I guess, you
25 mentioned that it's qualitative. Related to the next

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1 topic on onsite disposal where we've got the same
2 criterion show up, we were actually proposing making
3 it quantitative and putting a number 5 on that few
4 millirem. So if you all have thoughts on that, we can
5 talk about that now or later but --

6 MR. IKENBERRY: Yeah, that was kind of my
7 question because what is 8 not a few millirem and
8 three is a few millirem? I was kind of going that way
9 and I wondered, you know, the potential for trouble in
10 that.

11 MR. SCHMIDT: You know, all I can give you
12 is my personal view from when I was a kid, you know,
13 a couple is two, a few is about three, four or five
14 and several and, you know, that's not written down.

15 (Laughter)

16 MR. SCHMIDT: And I think that's why when
17 we were thinking about -- and it really came from Tom
18 Youngblood, who was thinking about the onsite disposal
19 issue, we have difficulty with that because, you know,
20 if it's one millirem, it's clear, I think and probably
21 two or three is clear, but some people think a few is
22 five and some people think a few is less than 10,
23 which isn't a huge difference but, yeah.

24 CHAIRMAN RYAN: I guess when you consider
25 the uncertainties in some of those things, they're all

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1 just a little --

2 MEMBER WEINER: And aren't you going to
3 have to say five plus or minus what?

4 MR. SCHMIDT: Or five times or divided by
5 three.

6 MEMBER CLARKE: Okay, Eric?

7 MR. ABELQUIST: I think the biggest gap
8 potentially with this guidance is when it's applied at
9 power reaction decommissioning sites and if I'm not
10 mistaken, currently if the licensee looks at the
11 materials that cannot be left, the equipment, that
12 means that prior to license termination, the equipment
13 is going to have to be removed from the site and the
14 current guidance lacking a disposition of solid
15 materials rulemaking, is the nothing detectible.

16 Basically the criteria states how hard you
17 look and as long as there's nothing detectible, it
18 will be leaving the site. And that's the potentially,
19 I think the biggest gap between materials that could
20 be released with the license termination rule versus
21 the materials that have to leave before the license is
22 terminated. So that's just a reflection that this
23 guidance continues to highlight the difference between
24 the materials licensees and the power reactor
25 licensees, not much that you can do there but it just

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1 -- it further highlights that there is this continuing
2 difference, if you're going to have to revert back to
3 the case by case of how material ultimately is
4 released. So that's just an observation.

5 MR. SCHMIDT: And a good one. I think
6 reactor licensees could, at least, apply you know, to
7 release materials at a few millirem as opposed to
8 undetectable. My understanding is that usually for
9 surface contaminated material, they have not done so.
10 But your point is, it does highlight that issue.

11 MEMBER CLARKE: Tom?

12 MR. NAUMAN: To expand upon that a little
13 bit, we're getting from -- and my experience is based
14 mostly in the power reactor segment. You're crossing
15 over from a qualitative to an emotional issue and
16 public perception and shareholder value. You know,
17 Exelon or TVA or Entergy, the large corporations that
18 are in this business, they can't afford to have an
19 issue with their local public associated with trying
20 to take advantage of a few millirem. So they end up
21 eating the cost and not fighting the battle, although
22 it's a substantial cost to them and I think clear
23 guidance would be helpful.

24 And you know, if they can go to their
25 constituents and say they're just following the

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1 regulations, then it becomes less of an emotional
2 issue. But right now, they have to default to no
3 detectible for materials leaving the site.

4 CHAIRMAN RYAN: Tom, just so I'm
5 understanding your point, would you like to see a
6 numerical criteria?

7 MR. NAUMAN: That's a tough question. You
8 know, a few is -- there's room for interpretation and
9 working with the regulators, but I think they need to
10 probably apply Reg Guide 1.86 type criteria to the
11 materials. Yeah, a numerical probably would be easier
12 to defend from an emotional perspective.

13 CHAIRMAN RYAN: Well, 1.86 suffers a bit
14 from my way of thinking, because it's surface
15 contamination based. It's not risk based.

16 MR. NAUMAN: Yeah.

17 CHAIRMAN RYAN: So how do we get from A to
18 B? I know I'm asking the hard questions but I think
19 it's helpful for the staff to, you know, kind of
20 explore that with us today and hear the views of, you
21 know, what might work, because I agree with you, it's
22 a tough problem. I mean, a few, five, 10, seven, you
23 know, whatever number you home in on, does it help, do
24 you think, the folks that you've mentioned, the
25 utility folks, to have a number?

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1 MR. NAUMAN: I think it does. I think no
2 detectible is obviously a tough number to meet.

3 CHAIRMAN RYAN: That's a never ending
4 chase.

5 MR. NAUMAN: Yeah, exactly.

6 CHAIRMAN RYAN: And well below any risk
7 threshold of importance when you get down to, you
8 know, current detection capabilities.

9 MR. NAUMAN: Yeah, so if you could
10 establish a number, there would an advantage down the
11 road, but again, it would be an uphill battle in a
12 public forum, I believe.

13 And maybe to steal Eric's thunder here a
14 little bit, taking a specific case, the concrete
15 blocks at Connecticut Yankee, they presented a few
16 millirem -- they fit into this few millirem criteria
17 and I know for a fact that they spent over \$10 million
18 going back and retrieving these materials that had
19 left the site because they hadn't left the site as
20 non-detectible, they had left the site within the
21 guise of the procedures in place at the time they left
22 the site. But those materials would align with this
23 release criteria here and it became such an emotional
24 issue that the utility had to go get them and bring
25 them back and how do we prevent that from happening,

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1 you know, in the guidance here and maybe setting a
2 number might be the key.

3 That's all I have.

4 MR. SCHMIDT: I don't think I really have
5 any response. I mean, that's a good point and
6 obviously a difficult issue.

7 MR. NAUMAN: Yeah, I just wanted to point
8 it out for your consideration more than anything.

9 MR. SCHMIDT: Thanks.

10 MR. DAROIS: I just had a comment that
11 kind of in regards to the real license termination
12 issue here on leaving material behind. And it just
13 appears that we're setting up the potential for
14 licensees to experience the slippery slope a little
15 bit and this is what I mean. If we go into a license
16 termination situation and I'm thinking of a larger
17 utility or a large facility at least, where they
18 choose to leave building standing onsite and survey
19 against the DCJLs. I can certainly see where we're
20 going to need to now look at other dose criteria for
21 other uses of that material after license termination.

22 And it just begs the question how much,
23 how extensive, you know, I've got a combination of
24 metal buildings and concrete buildings and do we need
25 to look at different kinds of landfills that this

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1 material might eventually end up being in? What's the
2 criteria? It could be a fairly substantial project to
3 consider all of that. And I'm not saying it's wrong,
4 but I'm just pointing out the fact that this could be
5 a substantial effort. Is it one building you're going
6 to leave, is it two? Do we have to consider all of
7 them? You know, so just be aware that this could be
8 a little bit of a slope, a slippery slope in what
9 we're requiring the licensees to eventually evaluate.

10 MR. SCHMIDT: That's a good point. Chris
11 may want to say something, too, but you know, one
12 thing that comes to mind is that it seems like in a
13 lot of cases some type of building occupancy scenario
14 might be a bounding, you know, exposure scenario.

15 MR. DAROIS: Well, it might unless the
16 materials go to groundwater in a landfill scenario.

17 MR. SCHMIDT: Right, so maybe it's -- so
18 maybe in a lot of cases, it's a case of trying to
19 determine if there's something unusual about the
20 contaminants or the material that would --

21 CHAIRMAN RYAN: Eric, your question got me
22 to think about the FUSRAP sites. I mean, those are
23 interesting industrial facilities, some small, some
24 very large where these exact questions have sort of
25 cropped up over a few cycles through each one. You

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1 know, I was involved in the '70s on some of the first
2 surveys east of the Mississippi and you know, as time
3 went on the surveys were improved and engineering
4 plans and decommissioning occurred, and of course,
5 those materials have been removed. Has anybody mined
6 that experience to see if there's any instruction
7 there for the things we're thinking and talking about
8 now? I know that's a huge mouthful to offer you to
9 think about but it just seems that there might be some
10 analogies there or some experiences that might be
11 useful.

12 MR. SCHMIDT: Not that I'm aware of, have
13 we mined that information. I mean, that's a good
14 suggestion.

15 CHAIRMAN RYAN: Because I mean, some of
16 those, of course, they're all in the 50-year old range
17 and it would be interesting even to see if, you know,
18 what you're looking at for scenarios of assessment how
19 those have evolved and that could give you actually
20 some powerful support views perhaps or have you adjust
21 it so it is supported, your views are supported. Just
22 a thought.

23 MR. SCHMIDT: Right. No, that's a good
24 point.

25 MEMBER CLARKE: Any other questions for

1 Duane or Chris for that matter? We're a little ahead
2 of schedule, but let's stick with the agenda and take
3 a break and come back at 10:45.

4 (A brief recess was taken at 10:20 a.m.)

5 (On the record at 10:47 a.m.)

6 MEMBER CLARKE: Chris McKenney, I
7 understand you'd like to make some comments.

8 MR. MCKENNEY: Yeah, just a couple things
9 I forgot to mention on the realistic scenarios issues
10 about the level of guidance versus level of detail in
11 the guidance is that there's other avenues; that the
12 staff really does approach it also on the fact that
13 while we have the generic guidance in the rule --
14 sorry, in the NUREG, that -- and there's the
15 flexibility in the rule, we do encourage licensees and
16 we have done this very actively in the past of having
17 many meetings with them on discussing before they give
18 us a license amendment or an ABTP or a -- I'm sorry,
19 not -- a license termination plan or a decommissioning
20 plan to discuss just what their plans are and what
21 scenarios they should be analyzing for their situation
22 so that we have covered the possible scenarios they
23 need to do and what unlikely scenarios they may need
24 to explore and how they may need to discuss them in
25 the license termination plan or DP so that we get that

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1 supporting coverage before we start down that path and
2 so that they can ask us how much work, basically they
3 need to -- they may need to so as part of their
4 process.

5 And also that just remember that the
6 guidance is guidance and licensees can go with
7 alternative approaches anyway.

8 MEMBER CLARKE: Thank you. Duane, I
9 understand you'll be our next presenter, Onsite
10 Disposal of Radioactive Materials.

11 MR. SCHMIDT: But I do get to go away
12 after awhile.

13 MEMBER CLARKE: Not if we can help it.

14 MR. SCHMIDT: Well, I'm going to stay
15 around. Yeah, Tom Youngblood had to leave for this
16 issue but he's on travel this week, so I'm filling in
17 for him. This one I'm a little bit more up on so
18 hopefully I won't have too much trouble with the
19 questions here.

20 So on onsite disposal to -- let's see,
21 we're on -- we're there. In the guidance we propose
22 a new Section 15.12 that would be added to Volume 1.
23 The main point of the proposed guidance was to discuss
24 three options really related to dose criteria. The
25 first was what we've called the current approach that

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1 I eluded to before of a few -- of doses not exceeding
2 a few millirem per year. The second approach was
3 allowing doses up to 100 millirem per year but with a
4 requirement that additional financial assurance be
5 provided. And the third option was an in-between up
6 to 25 millirem per year for mainly short lived radio
7 nuclides where the possibility of creating a legacy
8 site was minimal.

9 The first two of those options were
10 proposed by staff and agreed to by the Commission.
11 The third was one that was proposed by the Commission
12 in the SRM in response to our SECY paper. And just a
13 note, which really relates to the comments that we
14 received, we talked about this issue at the workshop
15 in April of last year. One of the questions that we
16 asked at that time was, did people feel like there was
17 a need for additional flexibility in criteria for
18 onsite disposals. And we got at least some limited
19 support for additional flexibility that might be
20 afforded by options 2 and 3. I guess the real reason
21 to mention that is giving away the comments that we
22 didn't hear that in the public comments.

23 Onto the next slide, I'll talk a little
24 bit about the comments that we did receive. We
25 received comments from four state governments, a

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1 couple of public interest groups and a private
2 citizen. And some of the state agencies were
3 generally opposed to onsite disposal. And in fact,
4 one of them opposed all onsite disposals. There were
5 differing levels of opposition, I guess. One state,
6 New York in particular, posed onsite disposals that
7 would later have to be remediated.

8 A number of commentors, including some of
9 the states were opposed to implementing these options
10 for onsite disposal by way of guidance and were really
11 suggesting that rulemaking was needed. One of the --
12 and finally, one of the public interest groups
13 observed that in particular in Option 2, the higher
14 dose level with financial assurance, that in a way
15 financial assurance was the main way that we were
16 trying to prevent the creation of legacy sites for the
17 future. And the commentor suggested that that one
18 method might not be sufficient to preclude legacy
19 sites. Just because you have money doesn't mean that
20 money will be available, doesn't mean that things will
21 eventually get cleaned up.

22 And to the next slide, our staff
23 considerations, this is a case where we did agree in
24 at least general terms with many of the comments that
25 we received, especially related to this option to the

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1 higher dose with financial assurance. We think
2 there's some validity to the comment that onsite
3 disposals are in conflict with preventing future
4 legacy sites. The comment about financial assurance,
5 that that requirement may not be sufficient to insure
6 that materials get cleaned up in the future and at
7 least to some extent we agree with the intent of the -
8 - or with the thoughts that rulemaking should be done.

9 I think partly we got, of the people who commented on
10 this issue, many of them, a good portion of them said
11 the same thing.

12 And I guess an additional consideration
13 that we factored into all this is the last bullet
14 here, trying to balance two objectives, the one of
15 preventing future legacy sites and one of providing
16 flexibility under the regulations. And here's where
17 maybe we're thinking that that balance should tip a
18 little bit differently towards preventing legacy
19 sites. So onto the next slide, our current --

20 CHAIRMAN RYAN: Duane, just to comment --

21 MR. SCHMIDT: Yeah, I'm sorry.

22 CHAIRMAN RYAN: -- or question here.

23 We've heard before a little bit on preventing legacy
24 sites and doesn't that really get way back up stream
25 into operations and inspections, you know, during a

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1 site life as opposed to close to the end?

2 MR. SCHMIDT: It does and onsite disposals
3 also can occur at any point in the facility's life
4 also. And so yeah.

5 CHAIRMAN RYAN: I mean, there was talk of,
6 you know, folks have financial assurance requirements
7 and how those might actually be measured as a function
8 of that have at least some measure of risk or some
9 view of risk for decommissioning.

10 MR. SCHMIDT: Right, and we are -- we do
11 have a separate rulemaking effort that will be
12 addressing some changes to financial assurance and I
13 don't know if we have detailed questions, I wouldn't
14 be able to answer those.

15 CHAIRMAN RYAN: No, that's fine, I'm just
16 trying to create for everybody here that there is a
17 linkage between the rulemaking for operational aspects
18 of financial assurance and these decommissioning
19 concepts where legacy sites is really the key phrase.
20 Is that fair enough?

21 MR. SCHMIDT: Certainly.

22 CHAIRMAN RYAN: Okay.

23 MR. SCHMIDT: That's a good point.

24 CHAIRMAN RYAN: Thanks.

25 MR. DAROIS: Let me add to that a little

1 confusion. When we do this analysis for operating --
2 an operating site, and we apply, say a 20 millirem
3 criteria, recognize that we haven't yet determined
4 what the site use condition is going to be yet for
5 that analysis. I mean, I've certainly run into this
6 situation before where there's been a prior onsite
7 disposal permitted but the pathway analysis was direct
8 exposure and it was occupational exposure, perhaps.
9 Now we go into decommissioning and that disposal
10 doesn't meet the 25 millirem say resident farmer
11 criteria or whatever the LTP end use would be. So
12 there's -- just because we're doing it doesn't mean it
13 can stay.

14 And that's an important distinction
15 because you don't even get into determining what the
16 scenario is going to be until you sit down with the
17 stakeholders in the decommissioning process and
18 negotiate that as we heard from Chris earlier. So,
19 the two may be very different.

20 MR. SCHMIDT: Right.

21 MR. NAUMAN: And a little clarification on
22 my part, too, just to ask you a question, Eric; is it
23 truly disposal or is it permitted storage until
24 license termination time? You know, what's --

25 MR. SCHMIDT: Maybe.

1 MR. NAUMAN: What's the difference?

2 MR. SCHMIDT: I guess that's my point.

3 MR. NAUMAN: Yeah, what's the difference?

4 You're not going to release the site until you analyze
5 the end state and that's not until you go into
6 decommissioning.

7 MR. SCHMIDT: Right.

8 MR. NAUMAN: So that permitted storage or
9 disposal cell is just there until such time as you
10 make that next phase jump.

11 MR. SCHMIDT: Yeah.

12 CHAIRMAN RYAN: It seems to me that it
13 would be helpful if the LTR guidance could actually
14 recognize what these two folks are bringing from their
15 own experience. If there is a transition point where
16 the rules could and legitimately change to the License
17 Termination Rule versus a determination by whatever
18 means during the operating life of the facility and
19 they're not necessarily carefully aligned because
20 they're different purposes.

21 No, and in the discussion that we've had
22 at other briefings on preventing legacy sites as an
23 operating issue it's, you know, are there more spills,
24 less spills, are there solids, no liquids, you know
25 those kind of criteria help you set the stage for

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1 well, is this going to be, you know, something down
2 the road or not? You know, are sewer treatment --
3 sewer outlets isolated from radioactive material
4 areas, you know, all those usual operational things.
5 So that's kind of a different set of issues and all
6 good.

7 I just think that the handoff between one
8 and the other, even though that guidance is under
9 development, too, that it might be helpful to at least
10 recognize that there are perhaps slightly different
11 issues even though they're aimed at the same goal of
12 not having you know, real problematic legacy sites.

13 MR. SCHMIDT: And actually, I need to go -
14 - I don't know if we moved forward. I need to go back
15 a slide because I forgot an important point. The
16 other thing that we've done in thinking about this, is
17 reviewed our data base of 20.2002, or recent 20.2002
18 disposals and there's a very small number over the
19 past -- we looked at -- well, it's not even this
20 century but since January 2000, there's a handful that
21 were for onsite disposal. My real quick look at those
22 with not seeing all the detailed information,
23 indicates that most, if not all of those have very low
24 concentrations of radio nuclides involved and would
25 probably have very low doses that would be within a

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1 few millirem.

2 Part of -- I mean, the real point of that
3 is that our thinking is also changing to be more that
4 we're not sure we see a need or a desire and I hope
5 we'll get some input here, especially from the reactor
6 guys here. We're not sure we're seeing need for
7 onsite disposals where doses might exceed a few
8 millirem per year, and that's the better lead to the
9 next slide is our current thinking is to back off on
10 Options 2 and 3 from our draft guidance to just
11 present Option 1, continuing the few millirem policy,
12 but to also note that of course, licensees can propose
13 other options. They always can but we would note
14 that.

15 That would be a change from what we sent
16 to the Commission and what the Commission asked us to
17 do. So that would be part of our discussion in the
18 Commission Paper. But that's our current thinking on
19 this issue at the time and welcome discussion on that.

20 MEMBER CLARKE: Okay, Ruth, would you like
21 to start?

22 MEMBER WEINER: This is somewhat the same
23 question I had before. If you simply go with Option
24 1 and you say a few millirem not to exceed five, there
25 is so much uncertainty in that determination. Are you

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1 going to put uncertainty in the guidance, some limit?
2 What if somebody does a model and says, "Well, it's
3 going to be six"? I mean, I think that's a question
4 that you have to face.

5 MR. SCHMIDT: I think if -- well, and this
6 one is harder because if we do put the number five in
7 the guidance, that really is only guidance. There's -
8 - the limit is certainly not five, the limit in the
9 regulations. Yes, we will have to face that. That
10 might be easier to say, yes, six is pretty close to
11 five when the uncertainty is four. You know, but it
12 is a little bit different than the LTR where we have
13 a limit that is -- I mean, we certainly acknowledge
14 there's a great bit of uncertainty especially in many
15 of these numbers.

16 MEMBER WEINER: The other question that I
17 have is for something -- for a situation like this
18 where you're going to allow onsite disposal of very
19 low activity stuff, what do you consider background?
20 Where is your background point?

21 MR. SCHMIDT: I guess I would -- I'm not
22 sure if this will answer the question. I mean, I
23 would consider background to be -- yeah, I guess I
24 don't know what you're getting at.

25 MEMBER WEINER: Maybe I can be a little

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1 clearer. When you say, okay, we're going to allow
2 onsite disposal of this material and terminate the
3 license, this is part of the LTR. And you say that
4 the dose delivered by this particular material is not
5 going to exceed whatever, how do you compare this to
6 the rest of the site, nearby areas that are not on
7 site? I mean, you're talking about very low activity
8 and really an almost so what situation.

9 How -- maybe my question is, how do you
10 present that to yourselves and to the public? This is
11 a little bit of activity, but if you go 10 miles down
12 the road you're going to measure a higher dose anyway.

13 MR. SCHMIDT: I guess I'm not sure what
14 exactly to -- I mean, that is an issue certainly with
15 public perception. I mean, we're aware that that's a
16 difficult sometimes and especially certain sites it's
17 maybe more of a difficulty where there's more
18 variability in either concentrations in soils or
19 whatever. I'm not -- I guess I'm not sure what else
20 to really say. We recognize that that definitely is
21 an issue of -- especially of public concern sometimes.

22 MEMBER WEINER: That's really all I was
23 looking for, that you recognize that there will be
24 people who say, "Oh, my goodness, you can't do that",
25 and there will be other people who will say --

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1 MR. SCHMIDT: Right.

2 MEMBER WEINER: -- it's not a big deal.

3 MR. SCHMIDT: Right, thank you. I
4 appreciate that. Allen?

5 VICE CHAIRMAN CROFF: I'd like to come
6 back to the point that Eric raised a little bit
7 earlier. If you go forward under Option 1, will there
8 be some language that will prevent the disposal from
9 becoming a legacy problem during decommissioning? Is
10 there such language attached to 2002 now?

11 MR. SCHMIDT: There's no language attached
12 to the regulation 2002 itself now. What we're
13 proposing which we had said in the draft and we may
14 want to expand, what we're proposing is that licensees
15 should consider doses for the existing situation and
16 also somehow doses for future use. And from what Eric
17 mentioned, you know, that's not something that was
18 necessarily done in the past. That's what we're
19 proposing so that people should think about this few -
20 - the thought is really that the few millirem would be
21 a fraction of the 25 for future use, and therefore,
22 there shouldn't be a need, you know, to remediate.

23 So that's our intent is to put words or to
24 add even more words, I guess in our guidance. We do -
25 - you know, this guidance is for decommissioning, this

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1 is an operational issue so we do have the difficulty
2 of figuring out how to get this guidance attached to
3 some operational guidance and that's something we'll
4 work on but --

5 VICE CHAIRMAN CROFF: And there's no
6 guidance with 2002 that requires looking at
7 decommissioning.

8 MR. SCHMIDT: To my knowledge there's not
9 at this time.

10 MR. DAROIS: There isn't -- well, for the
11 reactor licensees, there's 5075(g), although there's
12 no requirement in 5075(g) to do a dose evaluation,
13 it's just to inventory what you have and know where it
14 is, et cetera, keep a file on that.

15 VICE CHAIRMAN CROFF: It seems if future
16 legacies are going to be avoided, somehow that needs
17 to come of front.

18 MR. SCHMIDT: Right.

19 VICE CHAIRMAN CROFF: Thanks.

20 CHAIRMAN RYAN: I'll take a difference, on
21 the background question that's one you just -- you
22 know, I mean, it's in addition to background. You
23 don't regulate background. And it's -- you know, at
24 these small numbers, it is a fraction of background
25 and buried well within the range of normal variability

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1 of background. So I think that really puts a focus on
2 the question for the background.

3 To get back to the ideas that Chris
4 mentioned earlier about what the licensee can and
5 should do or has the option to do, to come in with
6 alternatives and things of that sort, it seems to me
7 that any time a licensee hears that or reads that,
8 that's very helpful, you know, that they have the
9 chance to offer alternate scenarios or alternate
10 calculations or you know, some view of the world
11 that's different than the reference case or the base
12 case or whatever else it might be, that's really
13 helpful.

14 And anywhere where you can -- particularly
15 on these issues where there are variability, you know,
16 or connections to other regulations, talking about
17 what the licensee has the option to do or to think
18 about is really helpful, I think. So I would look for
19 any opportunity to enhance that and you're probably
20 saying it two or three times extra probably isn't a
21 bad thing, you know, just to re-emphasize that point.
22 And I think the other part of it is the pre-planning
23 conferencing that can occur is probably a major
24 advantage for licensees to come in and hear for their
25 case, you know, for their facts and figures, what

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1 initial assessment might be or an initial view might
2 be to help them get on track. And that, I think, is
3 different than other regulations in other agencies.

4 You know, all agencies have open doors,
5 but, you know, this is the chance to really come in
6 and learn from the technical experts that have been
7 working on this for years at lots of sites as you guys
8 have, and I think emphasizing that is a key thing. So
9 that's just kind of a summary point or two from this
10 morning.

11 MEMBER CLARKE: Thanks. Bill.

12 MEMBER HINZE: I think we're all agreed
13 that we would like to eliminate or certainly minimize
14 legacy sites and in view of your possibility of moving
15 to the few millirem policy as the one option, I
16 wondering what the thinking was with regard to the
17 third option that you had, that you have now up to 25
18 millirems for mainly short-lived nuclides. How did
19 you see this minimizing legacy sites and in view of
20 that, how -- isn't it logical to keep this as an
21 option?

22 MR. SCHMIDT: It could be logical. I
23 guess part of the -- part of the question that we were
24 trying to answer in developing guidance for that third
25 option is what really do you consider short-lived and

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1 how do you insure that short-lived really is short-
2 lived relative to how long the licensee will truly
3 remain in operations. I mean, that's what's -- you
4 know, if short-live could be cobalt-60 if you've got
5 a licensee that's going to stay around long enough for
6 cobalt-60 to decay but you don't always know that.

7 I guess, you know, and this -- I don't
8 have a lead so this year is my personal view that
9 that option could kind of be left in or could be taken
10 out or could fit in as part of a few millirem. You
11 know, you might be able to -- or we might be able to
12 say, "Well, if the doses that you calculate today are
13 25 millirem but there's a lot of assurances that that
14 would be a few millirem by the time that license
15 termination really is likely to happen, you sort of
16 end up in Option 1. I don't know if that -- I mean,
17 I guess to me that option could kind of go either way
18 but there is a little bit of difficulty in how long
19 is short-lived versus how do you assure licensees stay
20 in operation.

21 MEMBER HINZE: When I look at your
22 proposed revisions to guidance, the third bullet under
23 the first bullet is "consider other requests on a case
24 by case basis". I really wondered if that wasn't
25 really incorporating option -- your Option 3. You

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1 know, and if it is, wouldn't it be better to state it
2 so that we have some specifics here in the rule
3 making?

4 MR. SCHMIDT: Or in the guidance. I --

5 MEMBER HINZE: Or in the guidance.

6 MR. SCHMIDT: I would agree with that. If
7 we really think that that's a good option, then we
8 should outline it. And that wasn't necessarily the
9 intent of the bullet on allowing other ones.

10 MEMBER HINZE: Then why should we
11 eliminate -- why should you eliminate this option in
12 the guidance?

13 MR. SCHMIDT: Maybe we shouldn't and I
14 guess you're suggesting that perhaps we shouldn't.

15 MEMBER HINZE: Well, I'm trying to get at
16 what -- you know, why should it be eliminated?

17 MR. SCHMIDT: I don't have a great answer
18 to that, I guess. If we were -- if we were trying to
19 focus or consolidate around getting to a point of a
20 few millirem, you know, a fraction of 25, in my view,
21 if we kept it in, I would might want to change it so
22 that it's clear that the end result is a few millirem,
23 and maybe that -- and that probably is worth -- you
24 know, I guess thinking about it right now, it probably
25 is worth saying, "Hey, that's one way of getting

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1 there". If you've got short-lived, you've got more
2 flexibility because of that, really.

3 MEMBER HINZE: Your problem there is what
4 is short-lived and --

5 MR. SCHMIDT: Yeah.

6 MEMBER HINZE: -- and if you made that a
7 little more specific, you would end up with an option
8 that would be very reasonable, I believe and very
9 viable.

10 MR. SCHMIDT: Yeah.

11 CHAIRMAN RYAN: If I may, Bill, you could
12 take the time line idea that you just mentioned and
13 offer discussion of that point. You know, for
14 example, if you're doing an onsite disposal today,
15 because you want to manage the material today, you
16 know, have the licensee suggest, "Well, we're really
17 looking at license termination in 25 years". Let's
18 pick a number just for the sake of the discussion, or
19 20 years. And so we'll be looking for your forward
20 looking assessment of what that will -- profile will
21 be, whether it's radioactive decay or you know,
22 whatever the other issues are, and you could actually
23 at least in principle, approve that kind of action but
24 have some, you know, future, "Well, we'll inspect it
25 at 20 years out or you'll have to readdress that to

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1 verify things are as predicted in your decommissioning
2 plan and sort of tie it together", but, you know, use
3 the fact that you've got a clock built in there more
4 explicitly. That's a possibility.

5 MEMBER HINZE: Right, right.

6 CHAIRMAN RYAN: Thank you, Bill.

7 MEMBER HINZE: And I really would exclude
8 the out there with financial -- with additional
9 financial assurance because you want the financial
10 assurance to be there and that's what you're saying,
11 too, it's this finite time period. The way you have
12 it written now is for being a short-lived nuclides
13 without and I would suggest just with additional
14 financial assurance.

15 CHAIRMAN RYAN: I wouldn't say additional.
16 It's whatever financial assurances are appropriate for
17 that facility at that time. You know, it's not with
18 or without higher or lower, it's what is the
19 appropriate financial assurance for the activity.

20 MEMBER HINZE: Right, right. But take
21 without additional out because that eliminates that
22 possibility.

23 CHAIRMAN RYAN: Yeah, I would take out
24 "without additional" and say "with financial
25 assurances", period.

1 MEMBER HINZE: Right, right.

2 VICE CHAIRMAN CROFF: Can I follow-up on
3 some of this? Has anybody looked at how useful this
4 might be, in other words, who might want to use this?
5 It seems like you're talking about ways that decay to
6 I'll call it innocuous levels fairly quickly. I mean,
7 I'm having a hard time seeing a dominate half-life
8 being greater than five years. It seems to me maybe
9 cobalt-60 is almost at the limit of what you could do
10 and even that might be pushing it. You might be
11 talking about, you know, somebody being active for 50
12 years, which is, you know, a ripe old business. You
13 know, maybe power reactors might fit into that but I
14 think a lot of material licensees may not.

15 So how much practical application would
16 there be on this? Has there been any consideration or
17 survey or --

18 MR. SCHMIDT: There's been at least some
19 consideration but not a detailed survey really that I
20 could point to. I think that's a good point and a lot
21 of the licensees that have, you know, some of the
22 research types of licensees that have very short-live
23 materials would --

24 CHAIRMAN RYAN: Accelerators would, you
25 know, probably be a big group that could consider it

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1 as well as some medical, nuclear medicine and some
2 other applications in those areas.

3 VICE CHAIRMAN CROFF: Basically, you're
4 talking about the decay in place option in 2002. I
5 mean, that's what this dissolves into.

6 MR. SCHMIDT: Right, that's kind of what
7 I was going to say, that if it was very short, you
8 wouldn't go to the trouble of burying it or
9 considering onsite disposal, right.

10 Yeah, so --

11 MEMBER CLARKE: Duane, it strikes me in
12 listening to this interchange that -- and maybe you
13 have this in the guidance, but legacy site is one of
14 those terms that could mean very different things to
15 very different people. Is a legacy site, for example,
16 one that cannot be released and it requires a survey
17 and monitoring and institutional controls and all of
18 these measures to protect the public for some period
19 of time? Is a legacy site a site where something has
20 been left behind? And it strikes me that a lot of
21 these onsite disposals doesn't necessarily mean that
22 you've generated a legacy site. So I wonder if
23 there's merit to that clarification if it's needed.

24 MR. SCHMIDT: I would agree with what you
25 said and that clarification might be helpful on that,

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1 yeah, because just because it was left behind, right,
2 doesn't mean there's a problem. The problem is what
3 is --

4 MEMBER CLARKE: Well, that's an
5 understandable interpretation of that term, if you
6 don't have a -- you know, a definition that we're all
7 working with.

8 MR. SCHMIDT: Right.

9 MEMBER CLARKE: Okay, Dave?

10 MR. KOCHER: Okay, again, I have to back
11 up and start with a really naive question. We're
12 talking about onsite disposals during normal
13 operations of a licensed facility and we're not really
14 talking about -- does this include onsite disposals of
15 waste produced during decontamination and
16 decommissioning?

17 MR. SCHMIDT: It could although usually
18 waste produced during decommissioning would be
19 addressed as part of the license termination plan or
20 decommissioning plan.

21 MR. KOCHER: Do you require that it be
22 sent offsite?

23 MR. SCHMIDT: No, not necessarily. Not
24 necessarily.

25 MR. KOCHER: It strikes me to where almost

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1 everything your agency does is a balancing act between
2 A, B and C and various competing interests.
3 Obviously, you want to avoid a situation where you
4 have to go in and dig up old burials. You want to
5 avoid any perception of end runs around Part 61, I
6 think. And although you can argue that, okay, if I
7 put waste in the ground and it's only a few millirem,
8 an argument for why it shouldn't be a whole lot higher
9 than that might be that a responsible operator of a
10 site will produce as low a footprint of contamination
11 as reasonable and when you build an onsite disposal
12 facility, you are deliberately increasing your
13 footprint.

14 And so there should be some kind of --
15 it's not a good idea to do that more than -- it just
16 doesn't look good. Do you see my point?

17 MR. SCHMIDT: Yeah, I do.

18 MR. KOCHER: So I could -- I was thinking
19 about West Valley and the issue of what scenario
20 should you assume in deciding what is an acceptable
21 onsite disposal. If I remember right, at West Valley,
22 the low level waste site from operations there was on
23 the back 40 so to speak. It was down the hill. It
24 wasn't on the site. Well, a resident farmer on the
25 site where the reprocessing was done is a no -- it's

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1 not going to happen that down on that waste site, why
2 not? There's a creek right there, irrigation readily
3 available, great site. It's already been cleared. So
4 you may -- this may be an arena where you want to
5 perhaps encourage a little forward thinking by your
6 operators in terms of future site conditions when they
7 are doing deliberate onsite disposals.

8 I mean, this -- it strikes me as this
9 should be a fairly restrictive operation within
10 reason. You certainly want to encourage it but you
11 don't want to let it be an excuse for avoiding Part 61
12 and other things.

13 MR. SCHMIDT: Right. I think that's a
14 good point. I think that fits with a lot of what
15 we're thinking about and where we're going on some
16 other related issues. You know, at this point, we
17 have not chosen to revisit the actual regulation and
18 maybe that's part of the difficulty of trying to fit
19 some guidance that's not totally, you know, agreeing
20 with the regulation but I think that -- I think it
21 makes sense what you said and I think that does fit
22 with our overall thinking.

23 MEMBER CLARKE: Chris, did you want to --

24 MR. McKENNEY: Yeah, I just want to say
25 that currently in 1757 Volume 2, we do have some of

1 that forward looking sort of statements in the
2 guidance on partial site release whereas we tell them
3 we have -- we suggest the licensee to forecasting if
4 they're going to release a piece of land today, and
5 they're going to continue operating for quite awhile,
6 that they should look at how that releasing that piece
7 of land may impact the future release of the entire
8 site and probably that will be similar in at least
9 tone or scope to -- it might be for what we're going
10 to possibly do for the onsite disposal.

11 MR. IKENBERRY: I guess when I look at
12 these options, some words came to mind that I read in
13 the draft guidance and that was the risk informed
14 graded approach and that seems to be an application of
15 that where you expect most of the applications to be
16 a few millirem and then you have the graded
17 applications higher and I also read some words about
18 last resort where that may be the application for the
19 100 millirem application taking into account you know,
20 where the potential environmental or human health
21 impacts may be higher to remove the material and to
22 leave it on site.

23 So that seems to fall directly in line and
24 seems to be a good process for applying to this. I
25 did have one question about that. Do you have any

1 scenarios in mind where that last resort of the 100
2 millirem might be applied? Have there been any cases
3 or -- I would expect those to be rare of course, and
4 you mentioned power reactors. I guess that's where I
5 would expect them as well.

6 MR. SCHMIDT: I don't have any in mind and
7 I'm not -- is there anybody else in the room that
8 does, jump in, but I don't believe we've thought of
9 any specific examples where that really would be
10 necessary.

11 MR. IKENBERRY: It seems like that would
12 be the thinking behind the second option is that it
13 was in those very rare cases where the impacts of
14 removal would be worse than the impacts of leaving
15 them onsite.

16 MR. SCHMIDT: Right.

17 MEMBER CLARKE: Eric?

18 MR. ABELQUIST: I'm thinking back in the
19 old days of decommissioning when we had the
20 concentration based limits, that typically a site
21 would clean up to the concentration base limit and in
22 those areas where they couldn't achieve the
23 concentration base limit, there might be an onsite
24 disposal. FUSRAP sites come to mind, certainly some
25 of the older SDMP sites. So when I looked at this

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1 guidance, I had a real hard time connecting a few
2 millirem with the fact that the license termination
3 rule is 25 in the context of if it's okay to have 25
4 plus ALARA, what is a few millirem really going to buy
5 someone? I'm looking at it the other way, is that
6 you're going to clean up to the 25 millirem and in
7 those areas where you just cannot achieve that, that
8 would be the formal burials or it would be an onsite
9 disposal cell, and by definition and my thinking, it's
10 greater than 25 millirem, otherwise you don't have it.
11 I don't see the connection between a few millirem and
12 the general prevailing dose criterion of 25 plus
13 ALARA. I just don't see the connection where it's
14 going to be providing any value, especially for
15 uranium and thorium sites when you're already at two
16 or three pico-curies per gram and then if you're going
17 to go to a few millirem, the two and three being
18 equated to about 25 millirem, now you're down to .6
19 pico-curies per gram. I don't think anyone wants to
20 call that an onsite disposal area. I mean, it's very
21 similar to background and almost -- you cannot measure
22 it any different from background.

23 So I'm just having trouble with the whole
24 Option 1 here, what that really provides.

25 MR. SCHMIDT: I think what it mostly

1 provides is flexibility during operations rather than
2 at the point of decommissioning. And, you know, I
3 don't have -- I don't have examples in mind of the
4 ones that have been approved. I'm trying to think if
5 I can remember a couple of the recent ones. Eric or
6 Tom might actually know that but the -- I guess the
7 examples that have come up where licensees have
8 proposed and we've approved have been operational, you
9 know, where reactors are currently operating, where
10 materials -- the one I think of is a little bit
11 different than what you normally think of that was
12 actually -- and I'm not sure absolutely that it was
13 onsite, it could have been on or offsite, where a
14 licensee disposed of waste in deep wells, a deep well
15 injection. That's a different kind of -- but you
16 know, I wish I could think of the reactor examples
17 right now, but I think it's more you know, a way to
18 dispose of waste that hopefully -- at least forward
19 thinking that hopefully won't impact decommissioning
20 but is a way for the licensee to deal with the
21 material at the time during operations.

22 I mean, at decommissioning, you're
23 certainly right. You don't get anything from that.

24 MR. NAUMAN: Okay, from a power reactor,
25 Eric mentioned earlier that you dispose on site, you

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1 store on site, it's almost interchangeable words, you
2 know, because when you go to license termination, then
3 you have to take those storage or disposal locations
4 into account for your overall site determination. So
5 it's literally storing on site and not disposing on
6 site.

7 And disposing probably is a -- is a trip
8 point for the public in general because they think
9 you're going to leave it there forever, and it's not
10 the case. You're just approving -- even if you're
11 burying it, they're approving a storage location until
12 such time as you terminate your license. And I think
13 operating reactors have the record keeping so that you
14 don't miss those areas and you clean them up at the
15 end if you have to. But if you're storing in less
16 than 25 millirem, then obviously, as long as it's not
17 a huge volume, it will probably be factored into your
18 overall and not have to be remediated going forward in
19 the future. And there's no reason to go to a few if
20 25 is your limit.

21 You know, you could go right up to 25 in
22 most cases. So the Option 1 of going to a few doesn't
23 really apply to the power reactors very well. But
24 following on David's discussion on West Valley, it
25 trips some thoughts in my mind. I'm more concerned

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1 with operational decision making on a year-to-year
2 basis. If I have a limited budget, why ship material
3 offsite to be disposed of if I can just store it? And
4 of course, you're increasing your volume and probably
5 your footprint for storage, but if there's no
6 regulatory requirement that I can't, why not store it
7 until license termination? The only problem with that
8 is, if you're not adjusting your estimates for
9 ultimate decommissioning, you may not have the
10 financial assurance in place to insure that you can --
11 you know, you can dispose of that material some time
12 in the future.

13 And if you're a small company, there is a
14 greater risk that you won't -- you'll go out of
15 business, you won't have the financial capability to
16 deal with this ongoing O&M expense that they should be
17 dealing with.

18 CHAIRMAN RYAN: Tom, just for my own
19 clarification, if I may, aren't utilities in the mode
20 now of trying to reduce their onsite inventories for
21 the very reason you say they want to reduce their
22 financial assurance cost, which is now an important
23 part of their overall management program? So --

24 MR. NAUMAN: You know, the pendulum swung,
25 Mike, several different times in our career.

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1 CHAIRMAN RYAN: Where are we now?

2 MR. NAUMAN: Right now, they're not
3 storing much material on --

4 CHAIRMAN RYAN: So there is the financial
5 incentive to get whatever they have that can be
6 disposed to be disposed ASAP?

7 MR. NAUMAN: Yeah, it's their ongoing --
8 and I think there may even be accounting issues
9 associated with the new regulations.

10 CHAIRMAN RYAN: Right, yeah, it's the new
11 financial model for utilities.

12 MR. NAUMAN: Yeah.

13 CHAIRMAN RYAN: I understand that because
14 in the old days, if it was the same for everybody, you
15 know, it's just a cost of doing business and it's in
16 the rate base.

17 MR. NAUMAN: Right.

18 CHAIRMAN RYAN: But those days are gone.

19 MR. NAUMAN: In '94 when Barnwell was
20 going to close, everybody built interim storage
21 facilities, store their waste so they could keep
22 operating. They at least had a means to control their
23 waste until such time as they had a disposal option
24 again.

25 CHAIRMAN RYAN: Right, but for the non-

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1 power reactors, I think if I'm not mistaken, correct
2 me if I'm wrong, Duane, but you know, you can't go
3 very far into accumulating a large inventory of
4 material without it having an impact on your
5 decommissioning cost and your financial assurance
6 requirements for the larger material licensees.

7 There is a negative to accumulating
8 material even for the non-reactor side of the house,
9 I would think.

10 MR. DAROIS: You know, certainly for the
11 reactor side of the house, I think this is really
12 applicable to soils. I mean, you're not going to take
13 a bunch of piping and put it in the ground these days.
14 I mean, I think it's happened historically but I don't
15 think that's the case. There are all kinds of state
16 regs that kick in on solid waste disposal sites that
17 just make this kind of a silly thing to do. So it's
18 soils.

19 MR. NAUMAN: Yeah, and okay, you don't
20 generate a lot of contaminated soils in the power
21 business. You would have some fines and some other
22 things that you want to store, but you just don't have
23 that big a generation, so this isn't that big a deal
24 for the power reactors. The Option 1, just a few
25 millirem, I don't think it's necessary. And my other

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1 general philosophy or view of this, since we're
2 focusing in on operations other than financial
3 assurance and decommissioning estimate, I don't see
4 how this applies at all to license termination. You
5 know, because it rolls back into the operational phase
6 and should be regulated there.

7 MR. SCHMIDT: That makes sense. Can I ask
8 you to just clarify when you say you don't think for
9 reactors you need Option 1, you think you don't need -
10 - what exactly do you mean by that? I thought I heard
11 earlier that -- and maybe I heard wrong, that you were
12 proposing that 25 millirems should be okay.

13 MR. NAUMAN: Yeah, if you're going to have
14 these options at all tied to operations, you shouldn't
15 have the few millirem. You should set it at 25 and
16 like Eric was saying, really the idea is to store
17 materials that are at 40 and count on decay to get it
18 down to 25 by the license termination time. So going
19 with the minimal rates, it doesn't add any value.

20 CHAIRMAN RYAN: But you're being specific
21 to the operational phase when you make that comment.

22 MR. NAUMAN: Absolutely.

23 CHAIRMAN RYAN: I mean, that's the
24 clarification, I think.

25 MR. NAUMAN: Yeah.

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1 CHAIRMAN RYAN: You're talking about, you
2 know, storing materials during operation before the
3 actual LTR process begins.

4 MR. SCHMIDT: Right, and that really is
5 what we're most interested in.

6 CHAIRMAN RYAN: Right, right.

7 MR. DAROIS: Well, that time you did steal
8 my thunder, but I have more. No, I agree with Tom.
9 My first question as I started looking at this a
10 little bit more was why this decommissioning guidance,
11 we've got to account for all this anyways. What's it
12 doing in here because this is really an operational
13 issue. More on that is what is disposal? Let's
14 define that and distinguish that from storage. I've
15 done several evaluations where a plant or a facility
16 wants to dredge their discharge canal and store that
17 dredge material onsite. They call it storage and I
18 said, "Okay, I'll do the evaluation", so we did, but
19 is that disposal or storage?

20 And I think that's a key point but not may
21 more key than where does this belong because I really
22 think it's an operation issue more than anything. But
23 the other thing is, what about spills, what about
24 underground leaks that create contaminated soils? Is
25 that storage, disposal, how does the fit? I mean,

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1 5075(g) says we've got to keep track of that, but when
2 do we get kicked into this? So that's the kind of a
3 question, I think, needs to be answered. If we stay
4 with this, then I think you need to define dose to
5 who. 10 CFR Subpart E says average member of the
6 critical group is what we calculate the dose to. So
7 is it -- I mean, it needs to be addressed, I think, as
8 to who are we calculating these doses to.

9 You know, I agree also, if we keep this,
10 on the comments regarding the few millirem, the basis
11 of the few millirem, I think in the Brench technical
12 position is as Chris pointed out, the contribution
13 offsite from multiple sources and if we're doing an
14 onsite disposal the rad protection program kicks in
15 and you know, you've got to measure doses and account
16 for doses onsite, so I don't know what a few millirem
17 does for us. So that's pretty much it.

18 And this isn't lost, by the way, on when
19 you get into materials licensees. I mentioned earlier
20 that 50.75(g) kind of hooks the operational thing into
21 -- operational plants into tracking spills and call it
22 onsite disposals, I suppose but I believe there's a
23 section in Part 30 that mirrors 50.75(g) for material
24 licensees. That's all I've got.

25 MR. SCHMIDT: Thanks. I don't know if I

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1 need to try to answer any of those or not.

2 MR. DAROIS: They're just comments.

3 MR. SCHMIDT: I guess we have -- and we
4 certainly appreciate the question, concern about where
5 does this guidance really go. Tom Youngblood has
6 certainly brought that up before and I guess maybe
7 we're still struggling with that based on the fact
8 that you've got a comment. I think that's something
9 we need to think some more about.

10 MR. DAROIS: I mean, an operational plant
11 is not going to even know this document exists.

12 MR. SCHMIDT: Right, right.

13 CHAIRMAN RYAN: Duane, I'm hearing kind of
14 a theme there that there ought to be a brighter line
15 between the guidance relative to license termination
16 and guidance relative to operational management of
17 materials. And whether you talk about it in this
18 document or not, you really ought to somehow discuss
19 you know, when you expect somebody to be in one arena
20 or another. Maybe that's really the key here is that
21 you've got to brighten up the when did I step from
22 being an operating facility to be a facility that's
23 now in the decommissioning phase.

24 Am I summarizing that from the --

25 MR. DAROIS: Yeah, I just don't think in

1 the decommissioning phase you're disposing of
2 material. You're passing the LTR criteria.

3 CHAIRMAN RYAN: Right, and that's why I
4 didn't say disposing of anything. I mean, you're
5 actually going from being under operational rules to
6 being under license termination rules and that --
7 everybody needs to know when you cross that line and
8 then what applies on one side versus the other.

9 MR. SCHMIDT: I think there's a couple of
10 good points in there. One is to make sure the
11 guidance is in the right place and the other is if it
12 stays, make it clear that line, as you say.

13 CHAIRMAN RYAN: Yeah, and it's a handoff.
14 I mean, it's two bits of guidance that deal with it,
15 then, you know, the guidance on the lefthand ought to
16 say, "Well, now you're on the right hand", and vice
17 versa. You know, it ought to be clear on both sides
18 of the handoff.

19 MR. NAUMAN: What is disposal, too. I
20 mean, do we want to call this waste disposal? It just
21 invokes a lot of other regulatory requirements outside
22 of NRC, too.

23 CHAIRMAN RYAN: Sure.

24 MEMBER HINZE: It can go from storage to
25 disposal.

1 THE REPORTER: I didn't catch that.

2 MEMBER HINZE: Sorry. It can go from
3 storage to disposal.

4 MR. DAROIS: It sure could.

5 MEMBER HINZE: It may be storage while
6 you're operational but disposal when --

7 MR. DAROIS: Then you leave it there.

8 MEMBER HINZE: Yeah.

9 MR. KOCHER: I would agree with the idea
10 about making some careful definitions about disposal
11 and storage. My naive view of this is that disposal
12 has two central attributes. One, it's something you
13 do deliberately. So you're leaking underground pipe
14 is not disposal.

15 The second essential attribute of disposal
16 in my opinion, is no intent to retrieve. So I'm
17 personally uncomfortable with the idea of putting
18 solid waste in a trench, covering it up with dirt and
19 saying, "Well, I'm going to come dig it up later". On
20 this issue of where the guidance goes, I can sort of
21 see where you were coming from here, is you're looking
22 at trying to tell the operator how to foreclose a
23 future problem is basically why you did it this way,
24 I'm guessing. But it's a good point that they're
25 making.

1 MR. SCHMIDT: Right, thanks.

2 MEMBER WEINER: But you know, David,
3 you've raised a really interesting point. A leaky
4 underground pipe is certainly not deliberate disposal
5 but the soil that becomes contaminated, what do you
6 then call that?

7 MR. KOCHER: That's not a 2002 problem.
8 That's a cleanup -- that's a License Termination Rule
9 problem.

10 MR. SCHMIDT: I know I'm not the reactor
11 guy, but that's my understanding, too.

12 MEMBER CLARKE: Actually, under other
13 regulations that is disposal, not NRC but EPA.

14 MR. KOCHER: We're talking about a logical
15 set of regulations here.

16 MEMBER CLARKE: I understand, for what
17 it's worth, David. Any other questions? Staff,
18 questions? Okay, let's adjourn for lunch and we're
19 scheduled to be back at 1:30.

20 (Whereupon at 11:45 a.m. a luncheon recess
21 was taken until 1:26 p.m.)

22 MEMBER CLARKE: On the record. Our next
23 speaker is David Esh and his topic is engineered
24 barriers. Welcome.

25 MR. ESH: Thank you. Nice to see all of

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1 you again.

2 CHAIRMAN RYAN: Your microphone.

3 MR. ESH: How is that? Is it on now?

4 CHAIRMAN RYAN: Yes. David, if you would
5 introduce your name and affiliation for the reporter,
6 that would be great.

7 MR. ESH: Sure. I'm David Esh. I'm in
8 the Division of Waste Management and Environmental
9 Protection. I work in the Performance Assessment
10 section and I had a number of contributors on this
11 effort. The Johnson Brothers, they aren't really
12 brothers, but it's easier to refer to them that way,
13 Robert L. Johnson and Ted Johnson who's a retired
14 annuitant, I think, is his official title. He's our
15 expert on erosion control issues and then also Jacob
16 Phillip and Tom Nicholson from the Office of Research
17 contributed to this.

18 Today I hope to just give you a summary of
19 the comments that we got and an idea of where we're
20 going. Any sort of feedback or input that you have is
21 appreciated.

22 MEMBER CLARKE: Excuse me, David. I don't
23 think your slides are up yet.

24 CHAIRMAN RYAN: (Inaudible.)

25 MR. ESH: Would you like me to wait or

1 fill in with random information?

2 MEMBER CLARKE: No, if you could get to
3 Slide 22, I think that's where we are.

4 CHAIRMAN RYAN: No, we'll go ahead. I
5 think everybody at the table has your slides in hard
6 copy.

7 MR. ESH: Everybody has hard copy.

8 CHAIRMAN RYAN: It's hard for the folks in
9 the audience. I think there are some extra copies on
10 the table over there. So go ahead.

11 MR. ESH: I really don't know how much
12 you'd be missing without the slides either. We had
13 two state governments, Colorado and New Jersey, and
14 three other groups provide primary comments on the
15 engineered barrier, part of the guidance.

16 The main areas of concern that we had were
17 the summaries of experience for various barrier types
18 were not up-to-date. The summary of the UMTRA
19 experience was not accurate or at least didn't
20 accurately describe some of the relevant experience
21 and the only area of real disagreement was that a
22 couple of the groups said engineered barriers should
23 not be used at all at unrestricted release.

24 We received comments on a variety of other
25 lesser topics on the guidance and we appreciate all

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1 the comments. We looked at it as an opportunity for
2 improvement. I'll walk through some of the main ones
3 here that we got and where we think we're going to
4 head to address them.

5 On Slide 24 for those of you with the hard
6 copy, on the issue of the use of engineered barriers
7 at unrestricted release sites, we feel like the
8 guidance was pretty clear that it's not preferred
9 approach to try to use an engineered barrier at an
10 unrestricted release site, but it's also not protected
11 by regulation. So in the event that somebody wanted
12 to attempt to do that, we felt we had to at least
13 mention it and discuss it in the guidance what that
14 meant and might entail.

15 What we envision is that somebody
16 attempting to an engineered barrier at an unrestricted
17 release site would be much more challenging than a
18 restricted release site because you don't have
19 monitoring and maintenance that you can rely on to
20 justify the performance of the barrier. You basically
21 have to demonstrate the passive performance credit
22 that you could get for a barrier considering the
23 expected degradation modes and the different type of
24 stressors that that barrier may experience, so
25 disruptive processes and even reasonably expected to

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1 occur human disruptive processes.

2 So it gets a lot more challenging to do
3 that for an unrestricted release site, but the
4 regulation doesn't prohibit somebody from attempting
5 to do that. I thought the guidance was pretty clear
6 on this already, but we'll look at it and maybe
7 emphasize it a little more strongly if we think we
8 need to.

9 Now in terms of the other main areas that
10 will take a little more work, we had in the guidance
11 -- Let me step back a second. Our initial thought was
12 that in the guidance we would provide a summary of
13 barrier types, kind of a summary of their expected
14 performance based on observations and experience and
15 what somebody could maybe expect for a barrier type.
16 So that somebody using the guidance and they come in
17 and they say, "I want to use a cementitious barrier
18 for my problem" how long if people attempted to use
19 that type of barrier for, what's the range of
20 experience, how have they performed or not performed,
21 we thought that would be useful in the guidance.

22 That type of information is challenging to
23 develop. I'll put it lightly that we have an attempt
24 in there. We think we can do much better, but
25 ultimately we're still going to wrestle with this

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1 question of what's the appropriate amount of detail to
2 put in guidance like this and where is it somebody
3 else's responsibility to generate that sort of
4 information. So I'm always kind of optimistic. I
5 would like to do more than what I think we should.

6 But in this case, I have to face reality
7 and this is just a real challenge that I'm not sure
8 how well we're going to be able to do. We're
9 certainly going to do better than our initial draft of
10 the guidance, but ultimately there's this resource
11 question.

12 Our individuals from Research are already
13 involved in some activities along those lines with the
14 National Academy of Science and they have a
15 relationship with Craig Benson at the University of
16 Wisconsin who has done a lot of work in the ACAP. I
17 don't remember what the acronym stands for now,
18 Alternative Cap Assessment Program, I believe.
19 Basically, they've looked at covers, at landfills and
20 those types of sites and instrumented them and did
21 detailed analysis. He might have spoken to your
22 Committee in the past I think. Maybe the experts
23 didn't hear him though. He basically instrumented
24 these caps and then did detailed analysis of the
25 information that they got from instrumenting the caps

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1 and learned a lot of valuable information about how
2 these caps work and how they might not work.

3 That information, I think, they want to
4 take it to the next step which is exhume and dissect
5 some of these caps or portions of them and look at how
6 the barriers may or may not have worked, what layers
7 failed, why did they fail, how did they change, how
8 did the properties of them change and develop that
9 sort of information that you would need if you're
10 going to go on the path of trying to justify long-term
11 performance of that type of barrier.

12 So they have a relationship with him and
13 then also are very familiar with Jody Waugh, I believe
14 it is, who was the main individual at DOE, I don't
15 know if it's in charge is the right words, but in
16 charge of the cap performance area for uranium mill
17 tailings and they hope to get some information from
18 him and see what sort of summary DOE may have
19 developed from that program that would be useful and
20 could be summarized in the guidance.

21 So that area, I think, any feedback that
22 you have about what you think is the appropriate level
23 of detail to provide in this type of guidance it would
24 be helped. Ultimately, I think we could put in, we
25 could do a lot, but we might not be able to do a lot

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1 in this version of the guidance on this time frame.
2 It might be a future revision that we bring in some
3 new information that would be more helpful.

4 In the area of the UMTRA experience what
5 we had attempted to do in the initial guidance and we
6 may not have done it as well as we could have is to
7 discuss that experience and basically say that our
8 interpretation of it is that that program has
9 demonstrated that you can make a barrier for long-term
10 stability of a cap. It hasn't necessarily -- We
11 weren't trying to come at it from an infiltration
12 control perspective but from a stability perspective,
13 an erosion control perspective.

14 Those types of caps after some initial
15 hiccups in the program, they are generally not needed,
16 monitoring and maintenance, in order to be stable.
17 DOE has performed monitoring and maintenance of them
18 removing vegetation. That type of activity has been
19 the primary thing, but our erosion control
20 specialist's perspective and my own and I believe
21 Robert Johnson's is that from a stability that sort of
22 activity hasn't been needed. So it is at least a few
23 decades of experience of trying to make an erosion
24 control cap, primarily for more arid sites, so not
25 necessarily for some of the humid sites that we may

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1 experience in decommissioning which has a different
2 set of challenges. But we hope to --

3 MEMBER HINZE: Excuse me. But that has
4 been without any active control, without any active
5 control, for example, in the vegetation and so forth.

6 MR. ESH: Well, that's the issue that they
7 have done active control of the vegetation, but I
8 think maybe it's speculative but it's kind of our
9 opinion that the vegetation control has even been
10 desired in some instances. Like if you have a
11 evapotranspiration cap, you like to have plants
12 growing there and the plants can also contribute to
13 stability and not instability. But from the stability
14 standpoint, the presence of some of these plants and
15 vegetative species would not greatly impair the
16 ability of that cap to act from the long-term
17 stability perspective. It may influence something
18 like infiltration and that's what I think the
19 confusion was in the guidance. We were talking about
20 -- The example that we put in there was from that
21 experience for erosion control, not for all the
22 reasons why you're using those type of caps which is
23 infiltration, erosion control and even radon release,
24 control radon emissions from those materials.

25 So we think we have that one under control

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1 pretty well and we'll do a better job summarizing the
2 experience. We thought about seeing if DOE has done
3 a summary of that experience in bringing that
4 information forward, too. We thought that would be
5 useful to the users of this guidance, a more detailed
6 summary of that experience.

7 And then moving on to Slide 25 -

8 CHAIRMAN RYAN: I asked this question
9 earlier today, but excuse me. How about the fuse wrap
10 sites?

11 MR. ESH: Yes, I think we are open to any
12 sort of experience that we think can be summarized and
13 beneficial in the guidance. I can't speak to that
14 today.

15 CHAIRMAN RYAN: No, I know you can't, but
16 I think if we could maybe and I'll be happy to make
17 some contacts and try myself. But that gets at two
18 issues. One is it's more like the license facilities
19 rather than just the soils part and two, it's east of
20 the Mississippi where there are more water issues and
21 so forth. So there may just be some interesting
22 history of stuff that has been idle for 30 or 40 years
23 just to learn.

24 MR. ESH: Yes, we envision that this area
25 of the guidance is only going to be used by a limited

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1 number of sites. So that's partly what we've
2 struggled with in terms of the level of information to
3 provide and if it's only going to be used by a few
4 sites, how much should we just provide in the guidance
5 as providing the right direction without doing a lot
6 of effort to provide all the details if the details
7 are the responsibility of the people that want to go
8 that route and implement the guidance in that
9 direction.

10 CHAIRMAN RYAN: Yes, and a real good
11 bibliography or maybe even an annotated bibliography
12 would be here's ten documents on this topic and that
13 topic and just getting folks steered in the right
14 direction would be a great start.

15 MR. ESH: Yes, and I think that's what we
16 thought as a great start to have.

17 CHAIRMAN RYAN: Yes.

18 MR. ESH: Even that can be a little bit of
19 a challenge in today's world. Yes, information is
20 very accessible to us, but it's also almost too
21 accessible. You get 198,000 hits on web search. So
22 what are you going to do with that? How do you find
23 the good ones or the right ones that are going to
24 provide the best information because we didn't want to
25 just provide references and say, "Okay. Here's our

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1 guidance. Here's the issue. Now go off and read
2 these 30 reports and try to make heads or tails of
3 it."

4 We wanted to try to pull the information
5 from those reports and make heads and tails of it in
6 the guidance, but then it would be more useful to
7 somebody. If they want additional information on a
8 topic that is beyond the level of detail that we would
9 in guidance, they can go read that report, but not
10 just take the short approach and say, "Go read all
11 these reports and you decide what you want to do it."
12 We don't see that as very efficient or maybe the right
13 thing to do.

14 MEMBER HINZE: Excuse me. But in some
15 cases, it's still evolving too. Our information is
16 still evolving.

17 MR. ESH: Yes.

18 MEMBER HINZE: And putting it into
19 guidance seems to make a benchmark and we want people
20 to move on from that.

21 MR. ESH: We also -- I think there is
22 certainly a great deal of uncertainty in some of these
23 things and there are some pretty broad ranges of
24 opinions on some of the subjects. So you may have one
25 group that says, "You can't use a geosynthetic for

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1 more than ten years because of this problem" and then
2 another group says, "Well, of course, you can. You can
3 use it for 700 years." So where is the real answer?
4 What do you need to do to decide whether it is more
5 ten or it is more 700?

6 The basic research and analysis, the type
7 of work that I think Craig Benson is doing with the
8 cats is a great example. It's not just paper study.
9 It's digging things up and analyzing them. That's
10 really what you need to do. Only that's going to give
11 you information on a few decade time scale, but that's
12 probably a much better predictor than not having that
13 information at all. So it's generally the approach
14 that we take to this things.

15 We did have a mention in the guidance when
16 we talk about, because you are going to end up
17 extrapolating barrier performance, and we talked about
18 multiple lines of evidence to support the performance
19 of the barriers. One of those lines of evidence that
20 we mentioned is natural analogs and some groups asked
21 or the State of New Jersey asked if we could provide
22 some examples of analogs. So we intend to do that in
23 the guidance, but we don't intend to provide a full
24 summary of natural analog's SFI to each barrier. That
25 would be a very large task. While useful, interesting

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1 and valuable, I don't think it's something that we can
2 do in the scope of this guidance.

3 We didn't or rather I would say we
4 shortchanged evapotranspiration covers maybe in the
5 guidance and also geosynthetics. We plan to talk
6 about those in a little more detail as to specific
7 barrier types in the revision.

8 Then there was an interesting question
9 about or a comment about the differences between 10
10 CFR Part 20 and Part 40. Basically, the issue was if
11 you're in decommissioning and you have a
12 decommissioning site with material similar to material
13 that you have a Part 40 license under decommissioning,
14 the comment was decommissioning allows you more lax
15 standards or requirements than what's required under
16 Part 40. If this material is basically the same, why
17 is that? Why, if I'm under Part 40, are you burdening
18 me with all these more difficult and expensive
19 requirements than if I was under Part 20?

20 Understand that these are different
21 regulations and written differently and different
22 materials and we think in the application of the
23 regulations that if you have a Part 20 licensee with
24 material that's similar to Part 40, you're going to
25 end up in the long run with similar types of

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1 requirements that would be required under a Part 40
2 license. So you'll have to justify cap performance
3 and those sorts of things that are similar to the
4 requirements that are under Part 40.

5 The question wasn't specifically about
6 engineered barriers. It was this higher-level policy
7 type question about materials and regulations, but it
8 applied to engineered barriers because they're used
9 for both of those types of materials or they would
10 probably be used. We plan to discuss that a little
11 bit, but I don't know if that would result in any
12 significant revision to the guidance.

13 Those are the main areas. There were some
14 other minor, lesser, smaller areas that we're
15 commenting. There was about the time of compliance
16 basically for Part 20. Why is it only 1,000 years if
17 you have material that persists much longer? I call
18 that minor not because it's an easy question to
19 answer, but because it's outside the scope of this
20 engineered barrier activity and I think it was
21 adequately addressed in the statement of
22 considerations for Part 20 as opinion of the staff.
23 But it's an interesting question. How long do you
24 need to demonstrate the performance of these systems
25 if the hazard persists for a very long time?

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1 And that's pretty much a summary of the
2 main comments. I'm open to discussion and detail of
3 any things you'd like to cover.

4 MEMBER CLARKE: David, let me get started
5 a little bit and if you're looking for additional
6 references, and I agree with you that I think your
7 best source of additional references are people you've
8 already mention. Craig Benson and Jody Waugh knows as
9 much about this as anyone I know. You would want to
10 focus those on demonstration projects, actually field
11 work and, as you say, the cap program is actually
12 getting into it now and looking at some of the
13 barriers after they've been in place for some time.

14 But the DOE experience, they have test
15 plots at Sandia, Hill Air Force Base and of course the
16 Hanford barrier which that design was based on a
17 natural analog, namely asphalt. And Jody has an
18 excellent analog for Burrell which is the mill tailing
19 site that's probably had the worst experience from a
20 biointrusion standpoint. Fortunately, it only had
21 four curies and the risk assessment showed it actually
22 increased evapotranspirations.

23 MR. ESH: These near-surface barriers are
24 in my opinion a much larger challenge than the
25 subsurface barriers or the deep subsurface barriers

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1 because of all the surface processes that you have
2 going on, potential biological impacts and they are
3 challenging problems and I think you can analyze them
4 to some degree, but then ultimately you have to look
5 at what data do you have to support it, to support the
6 modeling activity.

7 That's what we had hoped to try to
8 summarize this experience because we believe it would
9 be a little cumbersome for any one group to try to do
10 that themselves to justify their performance. So if
11 we could get people headed in the right direction,
12 then we thought we'd be doing a service to them. But
13 we also don't want to provide an inaccurate or
14 incomplete summary of that information because then
15 that wouldn't be of any value to them at all.

16 I think we wanted to summarize the
17 experience. There's also been -- The problem is that
18 we're dealing with not only caps but other types of
19 barriers, slurry walls, cementitious barriers,
20 geomembranes. This is a broad scope. So it's all
21 types of barriers and that makes the problem more
22 challenging than even it was just a cap experience.

23 MEMBER CLARKE: You know it's ironic.
24 With as much interest as there is in this area, that
25 there is no one source or few sources to get actual

1 performance information. The superfund sites have
2 been putting in barriers ever since the early '80s and
3 those same sites even before superfund were putting in
4 slurry walls and covers and all of that.

5 So the problem as you articulated is that
6 the length of service is much less than they expected
7 period of performance. But there has to be some good
8 information out there.

9 MR. ESH: And one of the biggest
10 challenges I think with the experience has been you
11 have some people who have used some of these barriers
12 and put them in, but what they're usually do is
13 monitor for extreme failure type condition. But they
14 aren't monitoring for actual NCQ performance to see
15 whether they can confirm that it's performing like
16 they conceptualized and modeled it.

17 So there's this gap of information in
18 between the two states that there's not a lot of it
19 out there. You have to really search to find it.

20 MEMBER CLARKE: Right. Well, at this
21 point, let me interject a plug that we are working up
22 in a follow-up working group a modeling and monitoring
23 interface that we hope can shed some light on this as
24 well. Let me stop and let's go to Eric.

25 MR. DAROIS: I don't have any comments on

1 this.

2 MR. NAUMAN: My only comment is the
3 applicability to decommissioning as a whole. It
4 doesn't seem to, except for institutional controls,
5 have any, I don't know of any instances where
6 engineered caps are being used especially in the
7 reactor world.

8 MR. ESH: I think the problem we're seeing
9 is that as the low-hanging fruit sites get picked off,
10 the other ones are starting to run into situations
11 where you will have a distinct challenge especially
12 from a financial standpoint to clean some of those up
13 to unrestricted release conditions. So the prime
14 example I would use is West Valley. West Valley is
15 going to use, right now at least they plan to use
16 caps, slurry walls, a bunch of different barrier types
17 at that site. Robert could probably comment on a
18 couple other sites like shield alloy. They plan to
19 use erosion control cover.

20 MR. NAUMAN: West Valley is a good
21 example. We were up there last fall. It's definitely
22 a long-term situation there that's going to have to
23 have solid controls.

24 MR. ROBERT JOHNSON: This is Robert
25 Johnson and as you'll hear when I talked about

1 restricted use, that these two sort of go hand-in-hand
2 and certainly West Valley will be the most extensive
3 use. But Shieldalloy, I know their planned restricted
4 use site also will need an erosion cover at least and
5 a shield covered with ripwrap or whatever type of
6 design we end up with there. Then we have one other
7 unrestricted site that is composing a ripwrap erosion
8 cover. So Dave is right. There are very few sites,
9 but some of these are really important sites that
10 we're trying to deal with.

11 MR. NAUMAN: Thank you.

12 MEMBER CLARKE: Eric.

13 MR. ABELQUIST: I don't have any comment.

14 MEMBER CLARKE: And Dave.

15 MR. KOCHER: Going back to square one for
16 me since I'm kind of new to this issue, we're
17 basically talking about barriers to infiltration or
18 erosion and that's about it or are you getting into
19 entombment of facilities, things like that?

20 MR. ESH: Yes, I think there has been
21 fairly extensive evaluation of the use of cementitious
22 materials for entombment applications, but our
23 emphasis and this initial version of the guidance was
24 on barriers for typical decommissioning sites that may
25 have a surface or subsurface source that somebody

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1 wants to control infiltration, water pathway,
2 associated releases or erosion surface type release
3 pathways and in some cases also to try to limit
4 contact.

5 If you do a restricted release, you have
6 to evaluate people being on the site and doing
7 activities. You may be able to use one of these
8 barriers a limitation of contact with the material,
9 an intrusion type scenario. So those are the primary
10 applications I believe.

11 MR. KOCHER: Has there been any useful
12 information come out of the NRC research program on
13 caps for low-level waste disposal facilities?

14 MR. ESH: Useful information, that's a
15 good question. I think there has been a number of
16 contractor reports on the subject but not necessarily
17 focused on demonstrating their performance. So the
18 reports are more focused on who do you analyze them,
19 what sort of information do you get. Basically in
20 NUREG 1573, the NUREG on performance assessment for
21 low-level waste facilities, there's an appendix to
22 that or a series of appendices that have references to
23 a lot of reports and there's a whole section of
24 reports on caps and engineered cap performance, those
25 sorts of things. They're all related to low-level

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1 waste facilities, but we don't have a lot of low-level
2 waste facilities out there operating with caps that
3 they could generate observations from is part of the
4 problem. So you're generally sent in other directions
5 to get experienced information.

6 MR. KOCHER: My understanding of the low-
7 level waste business is basically, and this is a
8 problem you all face, you have a fighting chance of
9 taking credit for these things as long as you're
10 maintaining. But once you stop maintaining them, it's
11 very, very hard to take much credit especially for a
12 surface feature. The underground barriers, I'm not
13 that familiar. But it's just very, very hard to go
14 out in time and say, "Yes, I'm not going to watch
15 them, but they're going to work."

16 MR. ESH: Yes, and that's I think the
17 general perspective. We try to take a total system
18 perspective when we're looking at these. So we want
19 to look at all the potential -- Or the guidance wants
20 to direct the licensee or the party that's trying to
21 use the guidance to consider all these disruptive
22 processes so that we don't have them using a cap and
23 they say, "We designed the cap. That's the way it
24 works. It works that way forever." "No, there's more
25 to it than that."

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1 Yes, it might work that way when you have
2 monitoring and maintenance, but you also, for
3 restricted release, you have to analyze it assuming
4 you lose your monitoring and maintenance. Then how
5 does it work? You have a different dose cap that you
6 apply for that analyses, but you still have to do that
7 analyses considering that it doesn't work in the
8 pristine design conditions and it degrades over time.

9 So I think the guidance is kind of told to
10 educate people as well as to provide information.
11 Somebody that wants to use a barrier for restricted
12 release, what do you have to do to do that? And it's
13 also even to educate our staff so that we don't have
14 a reviewer that's looking at site and they're using an
15 engineered barrier and they say they have a barrier
16 and I assume it works. Nothing ever happens to it.
17 Whereas another reviewer makes a different decision
18 regarding the barrier. So it would help us get some
19 interior consistency in our reviews as well as
20 improving the information that we may get from the
21 licensee that wants to use a barrier.

22 MR. KOCHER: And if I got the gist of your
23 earliest remarks about this is really you are kind of
24 discouraging engineered barriers in a way. In other
25 words, there really is a substantial burden of proof

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1 on the licensee to demonstrate to you that these
2 things will work and that these may be hurdles that
3 can't be crossed.

4 MR. ESH: I think I wouldn't say
5 discouraged. I'm actually a proponent of them. I
6 feel that man has solved a lot of problems and
7 applying engineered barriers to these types of waste
8 sites is not outside of the realm of accomplishments
9 that they've done in other areas, that they've
10 accomplished in other areas necessarily. But it all
11 comes down to a matter of dollars and if you can
12 remove the material for cheaper than you can build and
13 justify a barrier, you're going to remove the
14 material. If it's prohibitively expensive to remove
15 the material, you're going to look at alternatives to
16 try to put in barriers and handle the problem that
17 way.

18 I don't think people should always default
19 to removing the material if there is a smart
20 alternative to using a barrier especially in
21 situations where your contaminant may be short-lived
22 and you would spend a lot of money to exhume a bunch
23 of material and remove it and place it somewhere else
24 when it's going to decay. If you can put in a barrier
25 for enough time that's going isolate it during that

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1 decay period, that's probably your smartest
2 alternative for everybody.

3 I think we would probably discourage
4 people from using them for unrestricted release sites
5 just because it can get so complicated and therefore
6 also expensive. But for restricted release sites, we
7 recognize there are going to be opportunities where
8 people are going to have to use almost.

9 MR. KOCHER: One quick question and then
10 I'll shut up. I wasn't really clear about this
11 comparison between Part 20 and Part 40 Appendix A.
12 When you say that Part 20 is more lax, are you talking
13 in terms of prescriptive requirements for how certain
14 parts of the system function because the dose
15 criterion on Part 20 is more restrictive than the mill
16 tailings.

17 MR. ESH: Yes, it should have been more
18 specific and that was the comments of the thing. The
19 comments of the thing was basically that there's more
20 prescriptive requirements that are there for more
21 burdensome for how to --

22 MR. KOCHER: -- a mill tailing pile.

23 MR. ESH: -- for what you have to do under
24 Part 40 than what you have to do under Part 20. Part
25 20 allows you more flexibility. It doesn't put in the

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1 defined requirements that you have in 40, like 40 has
2 something about that you have to demonstrate the cap
3 performance for 200 years or 300 years or something
4 like that where Part 20 doesn't say anything about the
5 defined period that you have to have a cap.

6 MR. KOCHER: Just get you a dose and then
7 say okay.

8 MR. ESH: That's what the issue was. Yes.

9 MR. KOCHER: Okay. Thanks.

10 MR. ESH: Yes.

11 MEMBER CLARKE: Bill.

12 MEMBER HINZE: In response to David
13 Kocher's remarks, it was my understanding that there
14 was extensive research conducted out at Greenbelt,
15 Department of Agriculture. I see Tom Mickleson
16 shaking his head yes. And I would think that much of
17 this would be very applicable to this. Is that not
18 right? Has that been brought into this at all?

19 MR. ESH: No, I think that is right. I
20 don't know if Tom wants to talk about it explicitly,
21 but there were a variety of studies that were done out
22 there on basically caps to limit infiltration and
23 basically to look at different types of designs to
24 limit infiltration for, I think, low-level waste
25 facility applications.

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1 MEMBER HINZE: I think there was also some
2 --

3 MR. ESH: They had covers with like
4 juniper on them and different things like that that
5 data was developed from.

6 MEMBER HINZE: Right.

7 MR. ESH: So the problem with any of
8 these applications is you always get into the issue of
9 the relevance of the other information to your
10 application.

11 MEMBER HINZE: Site specific.

12 MR. ESH: Yes. Like the site specific
13 things can drive the whole problem and you can say
14 "I'm going to use the cementitious barrier. I want to
15 immobilize things from a chemical standpoint. I'm
16 going to put in a low permeability concrete. It's
17 going to modify the poorer solution pH to control the
18 solubility of plutonium for a thousand years" and I
19 referenced the Merra Copa site in Jordan that say
20 there's natural minerals there that are cement-like
21 minerals that have been there a long time and the pH
22 has been maintained at that condition.

23 I can tell somebody all that information
24 and they say, "Well fine. What does that have to do
25 with this site?" And that's always the way it works

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1 is they want a site-specific demonstration that if
2 you're going to do an extrapolation and you're dealing
3 with long periods of time you're never going to have
4 that.

5 You're just have to try to develop enough
6 confidence and the way our regulations are set up is
7 that it does not allow you to have an over-reliance on
8 a barrier because you have to analyze the situation
9 without monitoring and maintenance. If the barrier
10 doesn't perform as designed, what are the dose
11 impacts. So there is a threshold to protecting public
12 health and safety that helps address this uncertainty
13 and extrapolating performance.

14 MEMBER HINZE: In the spirit of providing
15 guidance and also keeping that guidance up-to-date,
16 have you or your colleagues considered the possibility
17 of referencing that website that could be kept up-to-
18 date with at least the pertinent reports and journal
19 articles, etc., the work of Benson and so forth? We
20 see this more and more in the literature. I haven't
21 seen it in NRC literature, but use of websites is
22 tremendously useful in keeping things up-to-date and
23 also minimizing. If we're talking about type
24 specific, then a person could go in and get the kind
25 of information they're looking for without you having

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1 to say this is the last word.

2 MR. ESH: Yes, I think that's a great
3 idea. We can certainly explore it. We're open to it
4 I should say.

5 MEMBER HINZE: That's great.

6 MR. ESH: I'm always -- I was recently
7 dealing on a different problem with cementitious waste
8 forms and I ended up at the Nyrex website in the
9 United Kingdom and they have done a lot of studies on
10 cementitious waste forms that were really relevant to
11 the problem I was working on and I could request the
12 reports for free. They arrived in my office on CD
13 five days after I requested them, whereas, I requested
14 something from downstairs and it took five weeks.
15 There's good information sources out there. If we
16 could be a good information source, I would be open to
17 it.

18 MEMBER HINZE: The problem is to keep a
19 website up-to-date and all, but the investment could
20 really be rather minor once it is prepared.

21 MR. ESH: Yes, I agree.

22 MEMBER CLARKE: Picking up on that, you
23 mentioned the mill tailing sites. They do have annual
24 inspections as you know and I think all of those
25 inspections are on the Grand Junction website. The

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1 kind of summary you're looking for, I'm not sure
2 whether that's been provided or not. But all the raw
3 data is there.

4 MR. ESH: When Ted before Ted Johnson
5 retired, he reviewed or I should say evaluated those
6 inspection reports and we thought about that in this
7 guidance. He said, "I've been out of NRC not
8 reviewing those reports for a little while now, but I
9 could go back and look at all the ones that have come
10 in and also think about trying to do a summary of
11 them" and we've thought about doing that if we can't
12 get the information that's already been done like that
13 by Jody Waugh or somebody else with that program.

14 We imagine they probably have already done
15 that and we can just benefit from that instead of
16 doing it ourselves. But if it doesn't exist, then we
17 thought maybe we would do it ourselves.

18 MEMBER CLARKE: Well, they do issue an
19 annual report.

20 MR. ESH: Yes, but I think the issue is
21 summarizing the reports for all the different sites
22 and relevant observations and that sort of thing. I
23 don't know if the summary report has the level of
24 technical detail that we would be looking for to try
25 to distill the information out of.

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1 MEMBER CLARKE: I suspect not. Mike.

2 CHAIRMAN RYAN: David, as always, thanks
3 for a thought-provoking presentation. I'm thinking
4 about covers and barriers and I took a couple of your
5 comments to heart. One is how do you know you've
6 designed it for the purpose you needed to actually
7 achieve. That's a great question. A lot of folks
8 design for a compliance point not a dose point. So if
9 a concentration meets some value at some location, I'm
10 okay. But that may or may not meet the ultimate dose
11 requirement of a termination rule or some other
12 applicable rule. So thinking about that up front I
13 think is a helpful thing.

14 The second is with that in mind the
15 Committee's been kind of wrestling with this modeling
16 and monitoring question which is what I'm thinking
17 about and we all monitor for compliance at some
18 derived value like a concentration in groundwater or
19 something. And we typically have for a disposal
20 situation some kind of a modeling exercise that has
21 gone on and I guess it's my experience that often
22 those are roads that never intersect. I think what
23 we're trying to think about is how can we combine
24 those two activities in a way where we could build
25 confidence over time.

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1 In other words, could we get to a position
2 where, and using all the information that you have out
3 there and it will be in the guidance and it will be
4 referred to on, say, covers, that you could offer a
5 design but then come up with some view where you could
6 commit to monitoring it in an appropriate way to build
7 confidence over time. So if you have, for example, a
8 higher requirement, say, institutional controls and
9 I'm picking wild numbers out of the air now, but, say,
10 year zero to ten or zero to 15, you have some
11 monitoring activity that's agreed to as being
12 instructive regarding performance. You get a thumbs-
13 up at year 15.

14 Then you can make at that time a decision
15 what's the appropriate view of the world for year 15
16 to 30 or 15 to 50 or something like that and we're
17 working with Tom Nicholson and other folks on his
18 staff and Jake and others to try and think of how we
19 could structure a working group session to pose that
20 question and think about it and come up some hopefully
21 useful ideas on how that work.

22 But tell me how you think about this kind
23 of general idea. Would that sort of scheme enhance
24 the kind of guidance you're putting forth?

25 MR. ESH: I think we support the approach

1 of trying to develop performance indicators to monitor
2 a system rather than monitoring for release of
3 contamination or as a precursor to release of
4 contamination. The challenge with that with respect
5 to a lot of these, maybe these engineered barrier
6 applications, is the uncertainty gets larger with your
7 extrapolation time basically. So you design an
8 engineered system.

9 There's probably a high degree of
10 confidence that it's going to work close to as
11 designed considering you go through all the right
12 steps to get there, but it's going to perform close to
13 as designed in the very near term, years, tens of
14 years. So you start getting out tens, hundreds, of
15 years, a thousand years. That's when the likelihood
16 increases that maybe it's not going to perform as
17 designed, but yet your monitoring is very local
18 temporally. You start your monitoring after you put
19 your facility in, but that's exactly the time where
20 you would expect to see nothing.

21 CHAIRMAN RYAN: Yes. But it could even
22 other indicators. That's the radionuclide tracking
23 part.

24 MR. ESH: That's what I mean. What would
25 be a reliable performance indicator that could

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1 indicate you might have a higher likelihood of having
2 a problem with your system down the line.

3 CHAIRMAN RYAN: Fair question. I'll give
4 you a couple of examples that maybe we can kick
5 around. For example, if I'm designing a cap and I
6 have high confidence in my waste form and I build it
7 right, I would not expect any subsidence. What
8 happens if I start seeing subsidence? Well, that's
9 an indicator of some kind of problem.

10 MR. ESH: Yes. Sure.

11 CHAIRMAN RYAN: So I think it's the non-
12 radiological indicators, maybe engineering related or
13 maybe even runoff measurement related. I'm expecting
14 infiltration to be some small fracture of rainfall.
15 Well, if I actually measure runoff, then I should be
16 able to do a water balance that says the infiltration
17 is around where I think it ought to be.

18 What if it's 10 times higher than you
19 thought it was going to be? Then that is a direct
20 indicator, again not radiological tracking for
21 compliance, but that says something is wrong. I think
22 this is related to some of the issues that Tom is
23 working on at the site over in Maryland to do these
24 very heavily instrumented sites and get at that.
25 That's where I think it's not just about measuring the

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1 radionuclide. It's about measuring the engineering
2 aspects and the system aspects, if you will, of how
3 that's behaving.

4 MR. ESH: We agree completely with that.

5 CHAIRMAN RYAN: So we're trying to wrestle

6 --

7 MR. ESH: -- moisture content under a cap
8 instead of radionuclide concentrations 500 meters down
9 gradient from the facility.

10 CHAIRMAN RYAN: Exactly. And simple
11 questions like if you have an impermeable sump system
12 in a disposal cell how many square feet does it have
13 to have to intersect a half of percent of the water
14 that could infiltrate. You find out you need a lot of
15 area to do that. So those kind of basic things, I
16 think if we could come up with some ideas along those
17 lines together, that might give folks better insight
18 as to what will work and where their leading
19 indicators might be.

20 MR. ESH: And I think the indicators are
21 not just how the system is performing, but also the
22 indicators should be developed to support or refute
23 your conceptual models or your modeling of the
24 facility. If you can develop information that's
25 consistent with your modeling, then you have a higher

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1 degree of confidence that your projection of your
2 modeling is more accurate.

3 CHAIRMAN RYAN: I couldn't agree more.

4 MR. ESH: If you are off from your initial
5 condition, the likelihood that you're going to be
6 right longer on, I think, decreases.

7 CHAIRMAN RYAN: I always use the example
8 to students about just don't take a sample for
9 radiological monitoring. Measure the water level too.
10 You can find an awful lot by just simply understanding
11 the temporal behavior of the water table or other
12 basic things that are pretty cheap to get once you
13 have the wells installed.

14 MR. ESH: Sure.

15 CHAIRMAN RYAN: And again, I think our
16 modeling and monitoring working group meeting is going
17 to be designed and maybe explore these and come up
18 with I won't say the top ten list, but key areas where
19 there's a lot of fruitful opportunity to do both for
20 very little additional effort and cost once you have
21 one of them up and running. Thank you.

22 MEMBER CLARKE: Allen.

23 VICE CHAIRMAN CROFF: Yes. Dave, I'd like
24 to get a little bit better understanding of the
25 assumptions that are used in assessing the performance

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1 of caps in a performance assessment, things like how
2 long is the cap assumed to remain effective. Can you
3 elaborate on the kind of assumptions that are used?

4 MR. ESH: Yes. I think that's part of the
5 purpose of the guidance is to get people moving in the
6 path of not assuming, but trying to demonstrate what
7 projections of performance instead of assumptions of
8 performance.

9 What I mean by that is the process we have
10 outlined is you go through a design
11 analysis/support/evaluation/monitoring process to try
12 to develop how you believe that cap will perform. You
13 don't say I'm going to assume that I can design a cap
14 that's going to last 200 years. You have to
15 demonstrate that you can make a cap that will last 200
16 years or whatever period of time you need it to
17 perform for.

18 So I don't know if the issue is one of
19 what assumptions are made in the cap performance. I
20 think what's typically done, what had been done, in
21 the past is you develop a design for a cap. You do a
22 computer model of it that has some projection of
23 performance. If it helps you achieve your goal, you
24 put that cap in. That's it. Then you're basically
25 done. You do some monitoring downstream and see what

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1 has been released.

2 I think the approach that we're kind of
3 pushing for and driving at is you don't assume
4 idealized performance. You analyze the potential
5 degradation mechanisms and processes that can occur
6 for that cap. You incorporate those into your design
7 and you evaluate those impacts in your performance.

8 A cap does not have to stay in an
9 idealized state in order to meet your performance
10 objectives. You can have some partial failure or in
11 some cases total failure if it occurs, how it occurs
12 and at the right time. But you can have partial
13 failures of your system that still allow you to meet
14 your performance objectives.

15 So I think the way people look at an
16 engineered system is it's either working or it's not.
17 But the reality is in most cases it's working very
18 well at the beginning but maybe not in an idealized
19 state and then at some point in time, it's still
20 working but not it's not failed completely either.
21 There is this continuum of performance that you have
22 for the system.

23 I'm not sure if I answered your question
24 directly, but I think the old approach might be that
25 you idealize something and assume that the new

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1 approach is you go through all these steps in the
2 process. But you don't call it an assumption anymore.
3 You might have to make some assumptions in the
4 analysis process, but it's really more at least a
5 semi-quantitative demonstration instead of an
6 assumption.

7 VICE CHAIRMAN CROFF: That's not quite
8 getting to where I was headed. Assume that somebody
9 comes in or has come in historically and they've said
10 we would like to use a cap and they give you an
11 analysis of its performance or give you an assumption
12 whichever. Is it permitted to assume basically that
13 maintenance goes on for an extremely long time and
14 therefore nothing ever gets out? Where do you draw
15 the line here?

16 MR. ESH: In a restricted release
17 analysis, you analyze the situation where you have
18 monitoring and maintenance occurring and how your
19 system will behave with that monitoring and
20 maintenance occurring.

21 VICE CHAIRMAN CROFF: Forever?

22 MR. ESH: For the time period that you
23 need and the second analyses that you perform as you
24 assume, you lose your control and you have no
25 monitoring and maintenance. How does that system

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1 behave?

2 VICE CHAIRMAN CROFF: Okay. You lose your
3 control at what time?

4 MR. ESH: At time zero.

5 VICE CHAIRMAN CROFF: Okay, and in the
6 first one, let's say you have a site, maybe a FUSRAP
7 site or something with very long-lived radionuclides,
8 and you put one of these caps on it. But at some
9 point, does the assuming maintenance and that it
10 continues to perform in the base case if you will get
11 a little bit --

12 MR. ESH: Well, I think you can have a
13 monitoring and maintenance situation that the
14 maintenance can range the whole way to replacement.
15 So you feel you can only design a cap for whatever
16 functionality you need that's going to behave for 30
17 years and in the decommissioning process for
18 restricted release, you have to have financial
19 assurance for the monitoring and maintenance part that
20 you have. So you have to establish a fund of
21 appropriate funds to provide for that monitoring and
22 maintenance that you expect you're going to need.

23 So the issue of lose of control is
24 supposed to be handled in that second set of analyses
25 that you have and also lack of monitoring and

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1 maintenance. The ability to provide for monitoring
2 and maintenance when you have control is supported the
3 financial assurance that you get from the funds that
4 you have to provide to do that activity or those
5 activities.

6 VICE CHAIRMAN CROFF: Okay, and in the
7 second analysis, the one where you assume failure from
8 get-go, what kind of a dose limit or criteria or
9 whatever you want to call it is used there to say
10 "Gee, that's too much" or not?

11 MR. ESH: The first level is 100 millirem
12 and then you can if that's going to be exceeded
13 justify that you can go to 500 millirem and you can
14 justify it if it's going to be prohibitively expensive
15 basically to meet the 100. You can go to 500
16 millirem.

17 VICE CHAIRMAN CROFF: Okay, but if it's
18 over 500 you have to do something anyway?

19 MR. ESH: Robert.

20 MR. ROBERT JOHNSON: Robert Johnson.
21 Under the LTR, any licensee would be bound to the dose
22 caps that David referred to, the 100 or 500 millirem.
23 However, for the West Valley site, you're probably
24 aware of the West Valley policy statement. The
25 Commission did kind of outline circumstances if the

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1 500 millirem cap would be exceeded.

2 What in that case would need to be done to
3 demonstrate like Dave was saying that further removal
4 or clean-up would be prohibitively expensive or that
5 they had cleaned up to the maximum extent possible.
6 But they still have to make the case that what they're
7 proposing to do would maintain safety and would make
8 protection. So that's the only time that permission
9 has looked at a possibility of exceeding the 500
10 millirem cap. Otherwise, all other licensees under
11 the LTR are expected to demonstrate compliance with
12 those caps.

13 VICE CHAIRMAN CROFF: Okay. Thanks.

14 MR. ROBERT JOHNSON: And I'll be getting
15 into this topic when I talk to you next.

16 VICE CHAIRMAN CROFF: Okay.

17 MR. ROBERT JOHNSON: Or maybe less now.
18 I don't know.

19 MEMBER CLARKE: Go ahead, Ruth.

20 MEMBER WEINER: Dave, you touched on
21 something that might be a good thing to look at which
22 was when you said that for the shorter half-life
23 radionuclides, perhaps engineered barriers, would be
24 a reasonable solution. Do you want to expand on that
25 at all? I was thinking something like cobalt-60 or

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1 even strontium and cesium. You have a lifetime that
2 you can reasonable project an engineered barrier to
3 perform.

4 MR. ESH: Yes, those are some of the
5 primary examples that I was thinking of especially,
6 say, cobalt-60, many other short-lived radionuclides.
7 I think there are some sites that have, because of the
8 operations that have occurred at those sites, they may
9 have certain kind of narrow sources of a specific
10 isotope or isotopes that would fall into that class
11 and some other sites like a West Valley that's not
12 really the case. There may be pieces of the problem
13 that that approach would be a good approach for, but
14 generally it has a whole set of both short and long
15 lived radionuclides that they have to deal with.

16 But in many cases though, the high
17 specific activity, short-lived nuclides can cause more
18 of a challenge certainly in the near term because of
19 their high specific activity and if they also have an
20 associated high dose conversion factor.

21 MEMBER WEINER: Yes.

22 MR. ESH: So you may be able to apply an
23 engineered solution to that part of the problem that
24 solves the short-lived component and then the long-
25 lived risks are manageable and appropriate. That is

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1 a situation that occurs too. It's not only limited to
2 a specific source of just short-lived. It may be that
3 the short-lived risk is large. You're long-lived risk
4 is low. Therefore, you need an engineered solution
5 just to deal with the short-lived portion of it.

6 MEMBER WEINER: So you're looking in a
7 complex site that has a number of radionuclides that
8 this might be applicable for part of this.

9 MR. ESH: Yes.

10 MEMBER WEINER: For some nuclides not
11 others.

12 MR. ESH: Yes.

13 MEMBER WEINER: Are you thinking of
14 reflecting that thought in the guidance because you
15 say you plan to ensure that engineered barriers are
16 not favored in the guidance and that's sort of a vague
17 statement. Are you going to expand on that in this
18 direction or in other directions.

19 MR. ESH: Yes. I think what we wanted to
20 try to do was not -- We have to be fair to the
21 uncertainty in the information and the variability and
22 the opinions regarding that information for different
23 barrier types. So we felt like if we have a strong
24 opinion about a particular barrier, when we're talking
25 about favoring barriers, it was emphasizing one

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1 barrier type over another type.

2 So we didn't want to say people should be
3 using geomembranes and you shouldn't use slurry walls.
4 If we can outline the problems associated with each
5 and, say, maybe indicate some advantages and
6 disadvantages and ranges of performance, etc., then
7 people can choose what they think is best for their
8 problem and demonstrate it justifiably. So I think
9 that we don't want to favor a particular type, but if
10 we feel like we have a fairly strong basis based on
11 experience, observation, etc., and we're accurately
12 summarizing experience, people might not like that
13 experience, but it is what it is.

14 The problem is like I'll talk about
15 cements for example. If you have a poor quality
16 assurance program with cements, you can get some
17 actual performance that differs substantially from the
18 your design performance. So that's an example of if
19 you just summarize that experience of how a cement may
20 have worked without putting the appropriate context of
21 why didn't it work, it might be unfair to cements in
22 general to say "Look. Cements have been used at this
23 site and the experience was awful. Therefore, cements
24 don't work." We just have to be cautious that we're
25 even and we're neutral on the information and that we

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1 accurately describe it.

2 MEMBER WEINER: Yes, that's a good point.
3 I also wondered if you had looked at some of the
4 analogs on the Department of Energy sites and we have
5 the Sandia Mixed Waste Landfill as good example of an
6 engineered barrier that is only expected, is only
7 required, to last for maybe 40 or 50 years and some of
8 these sites might give you analogs that you can
9 document and then point to and they cover a variety of
10 topographic and geographic environments.

11 MR. ESH: Yes, we think that -- We're open
12 to any sources of information. The difficulty is
13 getting it, receiving it, evaluating it and
14 synthesizing it.

15 MEMBER WEINER: Yes.

16 MR. ESH: It's a challenge. We realize
17 there's lots of information out there, but this
18 process of getting it all and getting it into a form
19 that's useful in the guidance is a difficult problem.
20 We think in this version of the guidance that we'll do
21 the best we can and provide some summary with a good
22 set of links to other sources, but that ultimately if
23 we want to go the next step, that's a bigger longer
24 project that maybe that would be reflected in a future
25 edition to the guidance.

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1 MEMBER WEINER: Thank you.

2 MEMBER CLARKE: Any other questions?

3 Mike.

4 MR. LEE: Dave, you made reference earlier
5 to NUREG 1573, the Low-Level Waste Performance
6 Assessment. There's a reference in there by the
7 National Academy on engineered barriers. I think it
8 was a 1990 study. You may want to go look at those
9 participants to see if there is any more recent work
10 because they do in that, if you may recall, they do in
11 that report address bituminous materials as well as
12 geosynthetics. So that might be a good starting point
13 to see if those principal investigators have done any
14 more recent work.

15 MR. ESH: Sure.

16 MR. LEE: And the other thing is one thing
17 that we didn't get into in that report which I thought
18 might have been useful is looking at analog sites. I
19 believe it's in the Mississippi River valley there are
20 some mounds, these Native American mounds, that have
21 been around for hundreds if not thousands of years and
22 I'm sure there have been some work to evaluate their
23 performance. I'm not sure what the mounds are for or
24 what's under them, but that might a good starting
25 point to look at some analog sites particularly in

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1 humid areas.

2 MR. ESH: That was one of the examples
3 that we already thought of pursuing or at least Ted
4 Johnson, our excellent contractor said he was so
5 interested in it that he basically said on his own
6 time and money he might go look at them and evaluate
7 them, etc., just because that's the type of person he
8 is. I think that type of activity, whether it's done
9 by us or done by somebody else, it's very valuable.

10 I have a variety of reports on natural
11 analogs. I have the Department of Energy's work on
12 high-level waste. I think that area is a valuable
13 area of research. You still run into this fundamental
14 limitation of basically why people believe that analog
15 applies to your site.

16 MR. LEE: I'd asked Ted how close those
17 sites are to golf courses. I know Ted's pretty busy
18 in that department.

19 MR. ESH: He claimed it was not to go
20 golfing. It would only be to evaluate those mounds.

21 MR. NAUMAN: Work, work, work.

22 CHAIRMAN RYAN: Back to that kind of
23 combination view of engineered and maybe even some
24 natural components of barriers for the short and the
25 long haul, that's a fruitful area I think. You'll

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1 find sites. I know Arnold for example, has both.
2 There's a polyethylene membrane and of course there's
3 always challenges about how long have they been
4 around, how long will they work and all of that.
5 That's fine.

6 But if you combine that with some of these
7 geomembranes that include Bentonite clay and other
8 kinds of barriers it's a belt and suspenders approach
9 perhaps, but incrementally it's not that expensive and
10 it's a confidence builder. So there's a component, I
11 think, thinking about engineered barriers as well as
12 the natural materials and seeing if there's any
13 synergies between the two.

14 MR. ESH: Two problems that I've found
15 when I've been working on this is that first whenever
16 people are making observations of their system, if
17 their observations are favorable, they usually quit
18 making observations. And the second thing is if they
19 observe something and it's bad, they don't like to
20 talk about it. They'll only talk about how they
21 resolved it. They don't want to give the details of
22 why it failed or what the issues of failure were. So
23 those pieces of information are things that would be
24 useful, but they're hard to come by.

25 CHAIRMAN RYAN: Sure. But to make the

1 point though, don't you think that if you do have some
2 suspicion that one kind of a barrier or another may or
3 may not work. In other words, cement may be good in
4 some settings or for some radionuclides and for
5 others, it doesn't matter much?

6 MR. ESH: Yes.

7 CHAIRMAN RYAN: For tritium, cement is the
8 same as clay in terms of permeability. Basically,
9 it's within a given range. But for ionic species,
10 it's great stuff. Basolonic materials lock up all
11 sorts of radionuclides, but again, I think you have to
12 think of it as a system and not just components of a
13 system. You have to integrate it and say what's the
14 whole picture. So natural materials and engineered
15 barriers offer you some advantages and in combination
16 might actually do a better job than each alone.

17 MR. ESH: Ideally, if you can provide some
18 guidelines certainly of things you might want to try
19 to avoid, that would probably be very helpful in the
20 guidance like you don't want to put a clay layer close
21 to the land surface generally at any site is what
22 Craig Benson found. Even in Georgia, they had a
23 drought period and that thick clay layer cracked and
24 became more permeable than the native soil basically.

25 CHAIRMAN RYAN: Sure.

1 MR. ESH: Just rules of thumb like that,
2 I think, would be useful to have.

3 CHAIRMAN RYAN: Sure.

4 MR. ESH: It's just a real challenge of
5 getting this information, synthesizing it and getting
6 into the form of this guidance. We think it could be
7 very useful to a lot of people, but it might be
8 something that we pursue over a longer period of time
9 and that might have more tendrils that affect other
10 work than just this area of decommissioning, the
11 incidental waste area that I work in where you deal
12 with the impact and projection of barrier performance
13 a lot and then eventually in any low-level waste
14 facility application. So this information could
15 benefit all those areas.

16 CHAIRMAN RYAN: Clearly, yes. Again,
17 that's why we've kind of carved out the modeling and
18 monitoring working group as a separate activity
19 because it does transcend across all of these areas.

20 MEMBER CLARKE: Any other questions?
21 David, personally I have to say that I really like the
22 direction in which this is moving. You've alluded to
23 the fact that in the early days of engineered barriers
24 there was a lot of anecdotal science, "don't do that,
25 it doesn't work." Well, maybe it didn't work there.

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1 Maybe it will work here.

2 And we went from prescriptive designs and
3 groundwater monitoring to "Oh, my God, what do we do
4 now," so putting the barrier and I'd like to think of
5 it as even a larger system than Dr. Ryan. I think of
6 it as the engineered barrier together with the
7 institutional controls that may be needed together
8 with the monitoring of both of those as the system
9 which is just the way I like to look at it.

10 The other is that I think in the past a
11 lot of engineered barrier decisions were made by
12 comparing the cost of the barrier to the cost of
13 removal. The actual cost of selecting contaminant
14 isolation is not just the cost of the barrier. It's
15 everything you have to do to monitor and maintain not
16 only the barrier but the institutional controls. So
17 I throw that out as just a helpful way at least for me
18 to look at that. Thank you very much.

19 MR. ESH: Thank you.

20 MEMBER CLARKE: Our next presentation is
21 Robert Johnson talking about the other part of this
22 system, Institutional Controls/Restricted Release
23 Provisions. Robert.

24 MR. ROBERT JOHNSON: Good afternoon. I am
25 Robert Johnson, a Senior Project Manager in the

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1 Division of Waste Management and Environmental
2 Protection. I've worked on this issue and briefed you
3 back in June on this issue and one of the things we'll
4 talk about today is restricted use and institutional
5 controls and a long-term control license that is one
6 of the parts of our guidance. It's the last resort of
7 the last resort and that's why I'm last on the agenda
8 today in the briefing period because they finally
9 moved me to the end instead of the beginning as I
10 briefed you in June.

11 If we look at the first slide on the
12 summary and just recap very briefly what was our draft
13 guidance about for this issue. I had a number of
14 components. One component was a risk-informed graded
15 approach to applying institutional controls and we
16 identified and defined what high-risk sites, low-risk
17 sites and then a range of different types of
18 institutional controls. I'll just comment that this
19 is kind of important because probably the sites that
20 we're working with today like Shieldalloy or West
21 Valley or other sites, they're really high-risk sites
22 and the fact that we're using a long-term or thinking
23 about a long-term control license today shouldn't give
24 people the impression that that's the only type of
25 institutional control that the staff thinks will work.

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1 We do have this graded approach and it was
2 presented and developed a little bit more in the
3 guidance so that you could stand back and look at all
4 the possibilities there and realize that we were
5 trying to match, the attempt in the guidance was to
6 match, the appropriate institutional controls for the
7 risk at a particular site. So keep in mind that even
8 though we're looking at a long-term control license
9 today, there may be other sites that could just use
10 conventional institutional controls if they're a low-
11 risk site.

12 But if they're a high-risk site, they're
13 going to need durable controls that's required by the
14 LRT and if they can't arrange long-term controls, then
15 a license may be one of the options that we think
16 about. So it's good to start off with just keep in
17 mind there is that graded approach out there and it
18 could be used in the future even though we're kind of
19 working a couple examples that only pertain to one end
20 of the graded approach.

21 As you know, the guidance also identified
22 two new institutional control options involving NRC
23 and this is where the last resort comes in. Part of
24 the problem that the guidance was trying to deal with
25 is that some licensees were not able to come up or

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1 arrange appropriate institutional controls and so the
2 Commission directed the staff to look at other ways
3 that we could provide those institutional controls.

4 So we came up with two, the long-term
5 control possession only license and then the legal
6 agreement and restrictive covenant (LA/RC) and we
7 maybe didn't say it enough in the guidance, but these
8 are last resort. They aren't just available for
9 anybody to use and it's not a free pass for getting
10 through decommissioning.

11 They literally are if the licensee can
12 demonstrate that they tried to establish controls and
13 they weren't able to make arrangements for the
14 controls like with the state or they were not able to
15 arrange an independent third party that's required by
16 the LTR. They have to demonstrate that and then if
17 that's satisfactory, then there may be consideration
18 for the use of the long-term control license. So I
19 want everyone to keep that in your mind. It's the
20 last resort of the last resort because restricted use
21 is the last resort for decommissioning.

22 Our guidance also had some revisions to
23 guidance on advice from affected parties and then we
24 included a new section on the total system what Dr.
25 Clarke was just referring to. It's not just

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1 engineered barriers. It's institutional controls.
2 It's monitoring and maintenance. It's financial
3 assurance and particularly the dose caps acting as a
4 safety net and really the sustaining protection in my
5 view over the long term is its reliance on this system
6 and that's what the Commission and the LTR did explain
7 in the Statement of Considerations. But we tried to
8 put that into our guidance as well. It's in an
9 appendix but it's there to give an answer to this how
10 are you going to sustain protection question that we
11 often get asked.

12 And then lastly, there was some guidance
13 on a risk-informed approach for long-term monitoring
14 of a site, of a cap, of the restricted use site.

15 If we go to the next slide please, Public
16 Comments. A summary of public comments, of course, I
17 guess we ended up with the largest number of
18 commentors, the largest number of comments. There was
19 a broad range of topics that I'll get to in a minute
20 and a lot of detailed questions. The comments though,
21 all of them, from all the commentors showed a lot of
22 insight and that they put in a lot of effort thinking
23 through this issue.

24 In some cases, it was from parties who are
25 looking at having one of these supplied to their

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1 state. So they had an interest in really looking at
2 it very carefully and not leaving any stone unturned
3 the way I feel. But in reality, they're asking very
4 good questions. That helps us make sure we're not
5 missing something. Even though today, I'll be kind of
6 going over what I think are the major ones out of the
7 whole set of ones that we looked at, as Duane pointed
8 out earlier, our guidance will address all the
9 comments. So I won't talk about them all today, but
10 just the ones that I thought were more significant.

11 We got comments on the LTR again for
12 instance. They couldn't help themselves ask questions
13 or comment on it and, of course, our guidance is
14 implementing the LTR. So we're not going to be
15 addressing suggested changes to the LTR.

16 We got comments as we already touched upon
17 but I'll mention a little bit about. The LTR is
18 different than Part 40, Appendix A or Part 61. So
19 they were worrying about differences the NRC
20 regulations.

21 Going to comments on the guidance itself,
22 most of the comments were on the long-term control
23 license. There were a few on the legal agreement
24 restrictive covenant and a few on the advice from the
25 affected parties. But there were no comments on the

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1 risk-informed approach or the total system approach or
2 the long-term monitoring. That's just an overview.

3 If we go to the next slide please, first
4 what I want to talk about is the comment on duration
5 of institutional controls and indefinite durability.
6 I have to put this one first because I think it comes
7 quite often is institutional controls typically can
8 fail. We have lots of experiences. How can we expect
9 them to last forever? How can we expect to use the
10 commentor's term "to have indefinite durability"?

11 That's a really good question. It's hard
12 to answer, but I thought maybe the Commission's words
13 would be better than mine. So I would start with a
14 quote and I just felt like I had to put the quote in
15 the slide. I had to read it. So I will because
16 that's sort of a foundation to me seriously of some of
17 the thinking that we have on a difficult issue.

18 The quote comes from the Statement of
19 Considerations of the License Termination Rule. It's
20 sort of like the fine print. You have to go hunt for
21 it in the record. So putting it out here might be
22 useful to remember that the quote going "Requiring
23 absolute proof that such controls would endure over
24 long periods of time would be difficult and Commission
25 does not intend to require this of licensees. Rather

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1 institutional controls would be established by the
2 licensee with the objective of lasting 1,000 years to
3 be consistent with the time frame used for
4 calculations."

5 They go on to say, "Although the
6 Commission believes that failure of active and passive
7 institutional controls with the appropriate provisions
8 in place will be rare. It recognizes that it's not
9 possible to preclude failure of controls. Therefore,
10 in the proposed rule, the Commission included a
11 requirement that remediation be conducted so that
12 there would be a maximum value, a cap, on the TEDE
13 from residual radioactivity if the controls were no
14 longer effective in limiting the possible scenarios
15 and pathways of exposure."

16 I think that just gives probably the most
17 realistic, practical view on a difficult issue about
18 how do you think about performance of controls with
19 total system in the future and it leads to the point
20 that obviously the LTR has set up two different cases
21 to analyze and two sets of criteria that licensees
22 need to comply with and they need to clean up to. The
23 first, of course, it's with institutional controls in
24 effect and then the second one, it's with
25 institutional controls not in effect.

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1 To answer your question earlier which is
2 a good one, I guess I view this, it's my personal
3 view, as these two are sort of bounding cases and they
4 give you, you just assume that controls are in
5 effective and you analyze that and you assume the
6 monitoring and maintenance goes on. And you can do
7 that because you're also analyzing the next one where
8 you're assuming that they're not going to be in
9 effect.

10 So reality is probably somewhere in
11 between. Right? And there could be just forever
12 arguments about how long will institutional controls
13 last, how will they fail, when will they fail, how
14 much will they fail, all kinds of questions. And I
15 kind of think the elegance of this approach is that it
16 puts a bound on those and gives clean-up levels for
17 both of them and then it requires, it's the only
18 regulation that we have that requires analysis of the
19 failure and what happens if the controls are not in
20 effective. What will happen to your system? So I
21 think there is some merit in this approach and it's a
22 very useful regulation.

23 CHAIRMAN RYAN: It's interesting to think
24 about it, Robert, in the sense of our discussion on
25 half-life and if I back out my thinking here it says

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1 anything with a 100 year half-life or so will tend to
2 perform with the barriers working and anything with a
3 longer half-life will tend to be in that mode where
4 you're kind of assuming that things are going to work
5 past that. It gets me to thinking about what
6 radionuclides and what wastes are in each of those two
7 bins.

8 MR. ROBERT JOHNSON: In each of those two
9 bins.

10 CHAIRMAN RYAN: It's an interesting
11 exercise to think about it. Source materials
12 obviously have a longer term and there's a lot of
13 stuff under 100 year half-life that would be kind of
14 on the inside of it. I don't have a good answer, but
15 it's just an interesting way to think about it based
16 on your reading and discussion of the requirement.

17 MR. ROBERT JOHNSON: And the sites that
18 we're dealing with mostly now are the uranium and
19 thorium sites. So from a restricted use standpoint,
20 we don't have any sites with the short-term
21 radionuclides.

22 CHAIRMAN RYAN: Right.

23 MR. ROBERT JOHNSON: All of ours are
24 uranium and thorium sites.

25 CHAIRMAN RYAN: Makes sense based on the

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1 ideas put forth. Interesting to think about it that
2 way though.

3 MR. ROBERT JOHNSON: The commentators also
4 point out, Part 61, is you only take credit or you
5 shouldn't rely on institutional controls after 100
6 years. So what's the difference here and I think they
7 are similar and from what I've been told, and there
8 are experts in low-level waste sitting around the
9 table and I'm not one, but the reason for the hundred
10 years was to provide time for Class A and Class B
11 waste to decay to acceptable levels. So it was
12 designed in that regulation for a particular purpose.

13 I would say that in the LTR it was
14 designed for a different purpose so that it would
15 applicable to maybe many different types of
16 facilities. But I think conceptually it gets at the
17 same problem. It's just another way of doing it, but
18 people typically bring this 100 year institutional
19 control time period up as well the Agency believes
20 that the institutional controls can only be relied
21 upon for 100 years. That's within Part 61 and I think
22 it's just a different regulatory approach that we're
23 using in the LTR and it's still is very protective
24 because it assumes failure at day one for the other
25 analysis and for the dose cap criteria compliance.

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1 I think our plan is to just try to enhance
2 some discussions up front in the overview to address
3 this particular issue and if we could go to the next
4 slide please. The first one I talk about here is
5 consistent analysis of institutional controls and
6 engineered barriers.

7 One comment suggested that when we analyze
8 for institutional controls not in place, we should
9 analyze for engineered barriers not in place and we've
10 already touched upon that in Dave's discussion, but we
11 don't plan on making any changes to the guidance here
12 because we feel that the Commission clarified this in
13 the West Valley policy statement where they discussed
14 that engineered barriers were not determined to be
15 institutional controls. They were separate. To us
16 that's important in the analysis for controls not in
17 place.

18 As Dave pointed out, under that
19 circumstance, then the licensee would analyze how the
20 engineered barriers that are used at that site how
21 they would degrade without monitoring and maintenance.
22 In some cases, like one site that we're looking at in
23 New Jersey, it looks like erosion is the principal
24 activity and the erosion control cover would be the
25 principal engineered barrier to protect the shielding

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1 of the slag.

2 So you can, we feel, we have confidence
3 that we have used a process to design erosion covers
4 to last a long time under the UMTRCA Program. So that
5 would be one example where that engineered barrier
6 could be relied upon to last a long time and if it's
7 designed to our guidance, degradation may not be a
8 factor in the analysis. Other engineered barriers, it
9 might be very different. So you just would analyze
10 the particular barrier and incorporate that analysis
11 of degradation in your analysis.

12 The next one, perceived inconsistencies
13 and we touched upon that also in Dave's discussion.
14 There were comments that the LTR or our guidance in
15 1757 and the approaches in Part 40 Appendix A in low-
16 level waste were different. They set up a double
17 standard for reclamation and disposal and that under
18 Part 40, those requirements were more stringent than
19 in the guidance.

20 Examples, I guess, as we touched upon
21 before would be under Part 40 and UMTRCA is the
22 requirement to have DOE or state being the long-term
23 steward under a general license with NRC for the
24 requirement to have stability for 1,000 years in the
25 erosion covers. So the commentor felt that

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1 requirement was different than our guidance and I
2 think the answer is this is the difference between the
3 LTR being a performance-based regulation and the
4 flexibility underneath that and how we're trying to
5 take a risk-informed performance-based approach in our
6 guidance to implement it.

7 That's very different than under Part 40
8 where you have a law requiring the approach and the
9 prescriptive approach. So these are just different
10 approaches. And in fact, some of the approaches that
11 we have proposed in our guidance for engineered
12 barriers and institutional controls are copying off of
13 some of the approaches taken in UMTRCA, a little
14 different language and all that, but we're trying to
15 learn from those experiences.

16 We're not planning to do anything about
17 this, but we'll inform the Commission about the views
18 that were presented in some of these comments about
19 different approaches. But those approaches are
20 required and the Commission when they finalized the
21 LTR and developed and finalized the LTR they were
22 certainly well aware of Part 40 Appendix A and Part
23 61. So that was given a lot of consideration at that
24 time.

25 Let's see. The next comment then would be

1 preference for rulemaking to implement the LTC
2 license. Now we're not even at the guidance yet. So
3 they're still working, the commentors are still
4 working, on the LTR and our process. Commentors felt
5 that this was requiring, not requiring, but including
6 a long-term control license was quite a departure from
7 the license termination rules. So it was a big
8 change. Also they felt that the Commission should be,
9 instead of implementing this option or these options
10 with policy and guidance, using rulemaking to provide
11 an opportunity for substantive public comment on this
12 major change in their view.

13 I have to say. When we did the LTR
14 analysis for the Commission, we looked at rulemaking,
15 we looked at guidance and recommended guidance to the
16 Commission. It was expected that some of these
17 options would only be used at maybe two or three sites
18 and it wouldn't justify a rulemaking for two or three
19 sites. Keep in mind that when we do a rulemaking, OMB
20 requires us to do a cost/benefit analysis of the
21 rulemaking. So it is important to look at the cost
22 and the benefits of that whole rulemaking process.

23 We felt that it was appropriate to move
24 ahead with guidance, but the Commission felt that
25 getting public comment was really important also. So

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1 as you might remember, they required us to do a number
2 of things to seek public comment. We wrote a
3 regulatory issued summary and provided that to the
4 public and to all the licensees to explain what the
5 issue in this case was and what the Commission's
6 direction was. We had a public workshop last April
7 and the Commission specifically asked for us to
8 provide them or inform them of the public comments on
9 this draft and that's what we'll be doing.

10 I felt that the Commission really believed
11 that input from the public on this particular issue,
12 maybe some of the other LTR issues also, but
13 specifically they called out this issue was important.
14 So we proceeded with guidance, but we proceeded with
15 opportunities for public comment and we'll inform the
16 Commission of what those comments are. We feel that
17 we'll be recommending to move ahead with finalizing
18 guidance here.

19 Now if we move to the next slide, we get
20 to the key comments on the draft guidance.
21 Interestingly enough when you look at all the
22 comments, we did have support from some of the
23 commentators for the LTC license and they felt that the
24 LTC license provide greater assurance. It was a
25 strong institutional control.

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1 As you might expect on the other hand,
2 commentors, another commentor, State of New Jersey,
3 did not support the concept. This happens to be their
4 state that we're looking at the possibility of a long-
5 term control license. But they felt that the license
6 was really long-term storage and it wasn't permanent
7 disposal since it would not meet the criteria that NRC
8 has established for disposal facilities. So in a way,
9 I think they were rejecting the LTR again and the
10 restricted use provisions in the LTR.

11 They felt that moving ahead this way with
12 the LTC concept was different than low-level waste
13 disposal and the disposal of uranium mill tailings
14 that had a concept of avoiding proliferation of sites.
15 This kind of gets into the next topic on proliferation
16 of restricted use sites and future legacy sites.

17 But going back, New Jersey also felt that
18 the LTC license would be a detriment to reuse of sites
19 because of the license itself. So they had a number
20 of very good reasons why they were against it and I
21 think that when you look at all comments together,
22 it's probably what you would expect. Some are for it
23 and some are against it and they have good reasons on
24 both sides really. So it's a policy call. That's
25 what it ended up in the LTR for restricted use and

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1 likewise it was a policy call to go ahead with the
2 option of an LTC license in the other legal agreement.
3 It's not expected that everybody will agree with it.

4 Moving on to this proliferation of
5 restricted use sites, I think some commentators felt,
6 and they had good reason, they were worried about more
7 sites when it's probably a good idea to have less
8 sites and we agree with them. That's why the
9 Commission really prefers on restricted use overall,
10 but they've provided for an option for restricted use
11 in some limited cases.

12 When you look at the requirements for
13 restricted use, it's difficult to meet those. If you
14 look at the requirements for the LTC license, it's
15 ever more difficult maybe to meet those requirements.
16 We certainly intend it to be the last resort of the
17 last resort and maybe we have to say it better in our
18 guidance because some of the commentators, a number of
19 them, sort of missed that idea. If they did, we have
20 to explain it a little bit better that it is a last
21 resort.

22 Also the thing that we didn't explain in
23 our guidance to help with this perception of what
24 we're doing, possibly leading to many more sites, is
25 that of the decommissioning sites that we have right

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1 now we only have three that are considering restricted
2 use. So we don't expect more out of the group that we
3 currently are dealing with and those can be viewed as
4 the existing legacy sites, the ones that have a lot of
5 difficulties dealing with. That's sort of a finite
6 pool right now and there's three of them that we're
7 dealing with.

8 When we did the LTR analysis as most of
9 you know of course, that we also had another whole
10 suite of issues on preventing future legacy sites and
11 we have a rulemaking that's starting up to deal with
12 that. So we really agree with these commentators, the
13 combination of the LTR being pretty stringent and
14 applying the criteria will limit the existing use and
15 then if we prevent the possibilities of future sites
16 like this from occurring with the rulemaking, that
17 should end up with very few sites. It shouldn't end
18 up with proliferation of sites just because we have an
19 LTC option available.

20 I really think that the staff and the
21 Commission have committed to this idea of
22 nonproliferation. I think it's a matter of people
23 understanding that there are a number of issues we're
24 working on and our guidance can better explain this
25 idea of preventing future legacy sites is an important

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1 issue and we think it will help with preventing these
2 things happening in the future. We have to explain
3 that better. It was a good comment.

4 Okay. Let's see. The next issue would be
5 the LTC license should not provide a means of avoiding
6 LTR requirements. I guess the commentor felt that
7 maybe an LTC license would allow a licensee to avoid
8 meeting all the other requirements of the LTR in 1403
9 and that certainly isn't the case. We've said it, but
10 maybe not clearly enough that the LTC license acts as
11 an institutional control. But in order to use, you
12 have to, a licensee would have to, demonstrate
13 compliance with all the other 1403 requirements just
14 like any restricted use. It is not a free pass to
15 avoid meeting all the other requirements. We just
16 have to be sure that we're saying that clearly enough.

17 The next issue is one of our favorites,
18 this case-by-case approach for prohibiting subdivision
19 of a privately-owned site. We talked about this a lot
20 in our June meeting and you gave us some information
21 that was useful and we incorporated into the guidance
22 and gave pros and cons on this particular issue. If
23 you have a restricted use site that has a portion that
24 could be released for unrestricted use, should you
25 keep the whole site together so it has some value or

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1 should you allow the licensee to subdivide it and
2 release the unrestricted piece and end up with the
3 small appendage, the restricted piece that likely has
4 no value?

5 So we put in pros and cons in our
6 guidance, but we did give an impression, not an
7 impression. We did say we preferred to keep the whole
8 site together. So some of the commentators disagreed
9 with that approach. Some of the commentators actually
10 agreed with keeping the site together. So again, we
11 had sort of a mixed reaction.

12 And because of the timing of it all, we're
13 actually testing, we're not testing, we're
14 implementing this at the Shieldalloy site in New
15 Jersey and their DP came in and said we want to
16 subdivide the site and our affected parties, our local
17 community, feels strongly, that it's better for them
18 to allow the subdivision and the release of
19 unrestricted portion. It will be better for the
20 community. They feel that's good. After a discussion
21 with them, they said that the licensee had discussed
22 this with their site-specific advisory board, all the
23 pros and cons, and on balance, they still felt that
24 this was their approach.

25 So I guess my view is looking back in the

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1 ACNW's comment letter suggested case-by-case and
2 that's probably where in our view that's really where
3 the guidance should be. It's probably useful to
4 explain the pros and cons in any event so future
5 licensees can think about it and they can discuss it.
6 I think we should encourage discussion with the
7 affected parties and the local people and get their
8 input because there may be cases where it would make
9 sense, where it would contribute to sustaining
10 ownership over the long term without a detriment to
11 the local community and the economy. So it's site-
12 specific as we recognize and case-by-case would be the
13 best approach possibly for this particular issue.

14 MEMBER CLARKE: Robert, do you think there
15 would be any merit into clarifying in a little more
16 detail what you mean when you say that the NRC prefers
17 a particular option? That doesn't say that you're not
18 willing to entertain approach. It says this is what
19 you prefer.

20 MR. ROBERT JOHNSON: Yes, that preferred
21 word seems to get a lot of attention. I don't know.

22 MEMBER CLARKE: It seems to be being
23 interpreted as this is the way it is.

24 MR. ROBERT JOHNSON: Yes, I guess maybe
25 what you're saying is that we could say we prefer it

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1 but we realize that it may be case-by-case and there
2 may be reasons why it wouldn't be preferred at a given
3 site and we might word it that way.

4 MEMBER CLARKE: For example, use the same
5 language with the long-term control license. You said
6 that was preferred over the legal agreement
7 restrictive covenant. But again to me that didn't
8 imply that you wouldn't entertain the other. So you
9 could make a good case for it.

10 MR. ROBERT JOHNSON: And that may be a way
11 we can look at the wording that way. I think it's
12 maybe just a balance. Sustaining ownership is
13 important I think, but the commentators pointed out that
14 if you have adequate financial assurance that's
15 probably important. I think the main consequence
16 trying to think about this a little bit more, maybe
17 you have some ideas, but the main consequence of
18 possibly not being able to sustain ownership in a
19 licensee would be more of a burden on NRC to take to
20 set up whatever needs to be set up like a custodian,
21 some custodian trustee, that would use the available
22 financial assurance to step in if there were a gap in
23 ownership and licensee. So it kind of falls back on
24 if we do allow this flexibility and allow subdivision
25 and if there is a gap in ownership in the future, then

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1 NRC will have to take whatever action it needs to
2 take.

3 CHAIRMAN RYAN: So the preference really
4 isn't for one alternative over the other. The
5 preference is to sustain site ownership.

6 MR. ROBERT JOHNSON: The preference
7 originally, the purpose was to, even though this is
8 sort of abstract I think, sustain ownership and a
9 licensee, ideally to do whatever needed to be done at
10 the site. We would provide our normal oversight of
11 that process as we've explained, but if there is a gap
12 in ownership, then NRC is going to have to do more.

13 We're going to have to fill that, we're
14 going to have to arrange for not fill it but we're
15 going to have to arrange for that and that's just more
16 of something for NRC to do and the license termination
17 rule's whole goal was terminate and we would be done.
18 So we're not looking for more work. We're looking for
19 less work.

20 CHAIRMAN RYAN: I'm talking about the
21 restricted release part. You're really trying to
22 offer to the licensee a couple of options where they
23 can maintain ownership and use the funds I would
24 assume from sales of properties to further activities
25 and so forth and that you're willing to do that if it

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1 helps with your goal which is to make sure there's a
2 competent owner in place.

3 MR. ROBERT JOHNSON: For any of these
4 things --

5 CHAIRMAN RYAN: We're coming back to case-
6 by-case because it really depends on the financial
7 robustness of the licensee. That's the real
8 fundamental issue here. If you have a licensee with
9 a lot of money, either one works. If you have
10 licensee that's strapped for funds, then partial site
11 release might help alleviate that burden.

12 MR. ROBERT JOHNSON: I guess there's
13 another aspect to it I think. The financial assurance
14 that needs to be set aside for all the monitoring and
15 maintenance should be sufficient. That's part of what
16 the review is about. So that money theoretically
17 should cover whatever work regardless of who's doing
18 it. The money should be there.

19 So it's like who's going to be there 100
20 years. Will today's licensee and owner be there
21 forever or will they sell the property or will they
22 abandon the property? There could be a gap in that
23 ownership and licensee and that's generally what a
24 concern would be.

25 CHAIRMAN RYAN: Gotcha.

1 MR. ROBERT JOHNSON: The money is fine.
2 I mean the money's not fine. You have to look at it
3 carefully, but the system is set up to have the money
4 there. It's just the person, the entity, to maintain
5 the site with those funds could be fragile.

6 CHAIRMAN RYAN: Okay.

7 MR. ROBERT JOHNSON: There was another
8 comment on flexibility for future changes under the
9 long-term control license. One commentor felt that,
10 asked the question, was there flexibility for a
11 licensee to propose a restricted release with a
12 different form of institutional control in the future?
13 Also a question was is there flexibility for NRC to
14 require an LTC licensee to remediate in the future
15 when an expensive disposal option becomes available?
16 Those are different questions. They are two really
17 interesting ones.

18 The first question on flexibility, we
19 would say, yes, there's flexibility. If there's in
20 the future another type of institutional control
21 becomes available, the licensee can propose what that
22 would be instead of the LTC license and you could
23 proceed with license termination if that's what they
24 would desire and if it were acceptable.

25 So there is flexibility and of course I

1 think our guidance already said there's flexibility
2 for a licensee to determine themselves if they want to
3 clean up to unrestricted use. If there's a business
4 decision or something, they felt like it was something
5 they wanted to do and there is flexibility to do.

6 But the question that the commentor asked
7 is is there flexibility for NRC to require clean up if
8 there's a cheaper thing that becomes available and our
9 thinking right now is that we wouldn't require that
10 because under the LTC license we believe that the
11 finality provisions in 1401(C) in the LTR apply that
12 once that LTC license is put in place that really does
13 complete decommissioning because it's shown that all
14 the requirements in the LTR have been met and
15 therefore, there would not be the potential for future
16 clean-up unless there would be a significant safety
17 threat and that's what 1401(C) indicates.

18 So we wouldn't require just because
19 there's a cheaper way out there, we wouldn't require
20 a licensee to clean up to unrestricted use. But if
21 they wanted to do it from a business standpoint and
22 there might a lot of motivation to do that, then they
23 can do that. That's what our thinking is with respect
24 to flexibility for future changes under the license.

25 The next comment is sort of related. The

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1 question, the topic, is under a long-term control
2 license since you're only amending the license, you're
3 not terminating the license, then you haven't
4 completed decommissioning. That's the point of the
5 comment and we're considering revising the guidance to
6 explain better that the long-term control license acts
7 as an institutional control and as I said before, the
8 licensee still needs to meet all the other
9 requirements of 1403 for restricted use.

10 We're just basically deciding to amend the
11 license as an administrative efficiency. We could
12 literally terminate the license because all the
13 requirements have been met. But administratively, it
14 would be a lot efficient just to amend the license.
15 But in the process, this question about you have
16 really completed decommissioning is likely to keep
17 coming up because part of the definition of
18 decommissioning is that you've terminate the license.

19 So what we would probably say in our
20 guidance is that we would consider that even though
21 the license is just being amended that decommissioning
22 is considered complete because all the requirements in
23 1403 have been met and we could consider even
24 incorporating that into the long-term control license
25 language in the event that the question comes up in

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1 future years. Did you really clean up the site
2 enough? Have you really decommissioned the site? If
3 the license included in it the statement that
4 decommissioning has been completed, then that may be
5 a way to deal with this question.

6 Moving on off the LTC license and on to
7 the legal agreement restricted covenant, there were a
8 couple comments we want to highlight there and that
9 would be on the next slide. There was a question on
10 the justification for a legal agreement restricted
11 covenant and in our guidance we had said that one of
12 the things that a licensee would need to do is to show
13 that there would be a significant benefit to the
14 licensee or affected parties of selecting the legal
15 agreement over the long-term control license.

16 A number of commentators felt that that
17 really wasn't necessary. Really, the important thing
18 was simply that the LA/RC would be effective in the
19 jurisdiction that you're working in. It would be just
20 as effective as the long-term control license. And of
21 course, the licensee would need to request the LA/RC.
22 They just would rather have that rather than being a
23 licensee.

24 And the second thing that remains very
25 important is that for use of the LA/RC you wouldn't

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1 have any need for expertise for monitoring and
2 maintenance. That would be pretty complicated because
3 that would typically require expertise in NRC review
4 of that capability and we could do that under the
5 license, but we can't be approving future owners
6 having the technical expertise. We can't approve that
7 under the LA/RC.

8 So essentially you can only use the LA/RC
9 for very simple cases we feel where there isn't
10 complicated monitoring and maintenance like of an
11 engineered barriers that would require special
12 expertise that would have to transfer from owner to
13 owner to owner over time. We feel that that's about
14 all they need to do is to justify the LA/RC and the
15 fact that it's a benefit to them we will consider
16 changing our guidance to remove that need to show
17 benefit.

18 Another comment received was on use of
19 environmental covenants. Some of the states said that
20 states could have a role in the LA/RC. They also
21 suggested that the guidance mention that states have
22 effective environmental covenant mechanisms available
23 which can be effective for institutional controls. In
24 actuality, it's not just related to LA/RC. It's a
25 broader comment that we think is really important.

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1 Looking at it a little bit more, the
2 Uniform Environmental Covenants Act is a model law
3 that was enacted in 2003 by the National Conference of
4 Commissioners on Uniform State Laws and the idea of it
5 was putting together this legal language could solve
6 a lot of the impediments to current institutional
7 controls and that the enforceability of institutional
8 controls could be improved as well as the controls
9 applying to future owners.

10 In other words, running with the land
11 could be greatly improved. So some of the causes for
12 failures of more traditional institutional controls
13 it's believed can be solved with applying this model
14 law that was created. But the model law has to be
15 enacted, of course, by the states, by each of the
16 states. So as the comment implies, it's not
17 necessarily readily available everywhere.

18 As a matter of fact, just looking at a
19 current status of this model law, it's available
20 right, it's been enacted, in 11 states. It's been
21 introduced for consideration in ten other states and
22 the key thing for us is the two states that we're
23 working in right now don't have it. But if they were
24 in the future to obtain a tool like this and it would
25 be working, it could be an example of maybe being used

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1 in the future and possibly involving the state in some
2 way in the future if they were agreeable.

3 It's something to watch and we're really
4 going to look at a little more about this and
5 including it in the guidance in some way. We're
6 working with OGC to look from the legal perspective
7 what opportunities there might be for use in
8 environmental covenants or at least making licensees
9 aware of it so they can go pursue it and it might be
10 a good first step to making sure they've really looked
11 at all the possible arrangements for institutional
12 controls in their state before they would consider NRC
13 options. We'll look at that and possibly adjust the
14 guidance to include that.

15 Those are the only major comments that I
16 was going to address today. There were lots of other
17 little ones. There are lots of other important ones
18 that might be interesting, but I wasn't going to talk
19 about any more.

20 I guess in a summary, a real quick
21 summary, I would say that we're going to be probably
22 recommending finalizing the guidance and not
23 rulemaking like some of the commentators suggested.
24 We'll be repeating Commission policy to implement the
25 LTC license with an amendment and work on some

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1 language that indicates that we would consider
2 decommissioning be complete if all of the requirements
3 in 1403 have been met even though we've just amended
4 the license.

5 We would consider adding information on
6 environmental covenants like I just said. We'll be
7 working on the wording of the subdividing of the site
8 to either explain a little more about preference or
9 just make a case-by-case option. And then lastly, we
10 have I think some things to clarify just because some
11 of the commentors for whatever reason didn't pick up
12 on some of the concepts like the last resort is the
13 last resort. We want to explain a little more our
14 reasons for why we think that putting these options
15 out there should not lead to proliferation of
16 restricted use sites and then also probably that the
17 long-term control license can be okay for reuse of
18 sites.

19 It shouldn't preclude reuse of sites in
20 the general sense because what we're asking for is
21 that not only do you lay out the restrictions of a
22 path applicable to a particular site but you lay out
23 any permitted uses of the site. So there may be
24 options at sites where you can use it for some
25 purposes and not others. We may explain that concept

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1 a little bit more.

2 That's the end of what I was going to
3 present. I'd be happy to answer questions that you
4 have on what I presented or questions that you might
5 have from other comments that the commentators have
6 given us.

7 MEMBER CLARKE: Robert, thank you. David,
8 would you like to start?

9 MR. KOCHER: Again going back to square
10 one, let me make sure I understand what you mean by
11 last resort of last resort. I guess if I heard you
12 right that involves two things. One is you expect
13 restricted use situations to be unusual.

14 MR. ROBERT JOHNSON: Yes.

15 MR. KOCHER: And then in the restricted
16 space of restricted use site, you expect it to be
17 fairly rare that a licensee cannot provide for
18 adequate institutional controls as laid out in the
19 rule now.

20 MR. ROBERT JOHNSON: That's right.

21 MR. KOCHER: Okay.

22 MEMBER CLARKE: Just to clarify, that's
23 using the graded approach. So they might need durable
24 controls, but there are other ways of having durable
25 controls on the license and the legal agreement.

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1 MR. ROBERT JOHNSON: There can be. That's
2 right. In practicality, that may be difficult, but in
3 concept, I think there are options that licensees
4 could consider.

5 MR. KOCHER: This whole area is not
6 something I've thought a great deal about, but I had
7 thought of this on my own and I was receptive to
8 comments about lack of consistency across different
9 rules. But I think I think of that problem at 40,000
10 feet rather than on the ground. We're, in many areas,
11 basically in the world of perpetual care over things,
12 low-level waste sites, those rare sites under the
13 license termination rule that really can't be cleaned
14 up to restricted use, mill tailings sites. We're into
15 watching those forever. RCRA sites, we're into
16 watching those forever whether we like it or not.
17 Many superfund sites the same way.

18 Somebody needs to think about the benefit
19 of having some kind of uniform system for deciding who
20 is the ultimate bagholder here and how are we going to
21 pay for it rather than have a mishmash of different
22 approaches to picking responsible parties and I would
23 think the states would be very sensitive to this
24 because they probably are the ultimate bagholder in
25 most of these cases.

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1 This is way above your level, but if we go
2 about this in patchwork fashion of one set of rules
3 for license termination rule sites and another set of
4 rules for low-level waste and another set of rules for
5 RCRA and a fourth set of rules for mill tailings, we
6 have a mess. That's an editorial comment.

7 MR. ROBERT JOHNSON: I'll just react to
8 the last set of comments of our own regulations. I
9 think we have of consistency when you look at the
10 details on the use of institutional controls. There
11 may be different ways of going about it. The mill
12 tailings are all DOE and under a general license, but
13 our specific license long-term control is really just
14 a variation on that theme and low-level waste you have
15 government ownership under an NRC license. So I think
16 there's a lot more similarity across our regulations.

17 MR. KOCHER: I didn't mean to imply that
18 it was all different, but this was just sort of plea
19 that somebody needs to be looking at the entire
20 landscape here about future commitments to watch over
21 places where we don't want people to get into.

22 MR. ROBERT JOHNSON: I'm not sure I can
23 offer anything on that.

24 MR. KOCHER: I'm not expecting you to.

25 MR. ROBERT JOHNSON: Although you sure see

1 exactly what you're describing. That's where we are
2 today.

3 MR. IKENBERRY: I had a comment on the one
4 key comment that was the consistent analysis of the
5 institutional controls and the engineered barriers.
6 Those are clearly two different things. So I don't
7 really understand the comment and it seems like that
8 analysis would be done in the process of looking at
9 the unrestricted release potential. So is that
10 something that was just missed do you think by the
11 commentators because the answer to that question gets
12 really done as they move through the process from
13 unrestricted release to restricted release?

14 MR. ROBERT JOHNSON: I don't think it was
15 missed. I think it was just viewed if you're assuming
16 institutional controls failed, then you ought to be
17 conservative and assume engineered barriers failed.
18 I'm pretty sure they know exactly what they're saying
19 in that.

20 MR. IKENBERRY: Right. But if you did an
21 unrestricted release analysis and say you have 80
22 millirem a year for example, by assuming failure of
23 institutional controls and of engineered barriers you
24 basically are getting back towards that same number,
25 are you not, that drove you from the unrestricted

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1 release to the long-term control?

2 MR. ROBERT JOHNSON: You're likely to have
3 a very high number in any event.

4 MR. IKENBERRY: Right.

5 MR. ROBERT JOHNSON: If you can't rely on
6 any controls at all, you're going to end up with a
7 very high number. That's right back to where you are
8 today is what you're saying.

9 MR. IKENBERRY: Right.

10 MR. ROBERT JOHNSON: I just think that
11 commentor knew. They were just trying to put that out
12 on the table because before the West Valley policy
13 statement there was an issue in the LTR that
14 engineered barriers could be considered as
15 institutional controls. From a legal standpoint, the
16 wording and all that stuff was not clear.

17 So some people really felt I think
18 originally that the LTR was ambiguous on this subject
19 to the point where the Commission addressed it in the
20 West Valley Policy Statement and explained it and made
21 it very clear that they are separate.

22 MR. IKENBERRY: Okay.

23 MR. ROBERT JOHNSON: So in parts it's
24 people reading the language that's just not seeing
25 what the Commission has said maybe in the West Valley

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1 Policy Statement, not being aware of all these
2 different pieces of paper that are hard to keep track
3 of even for us and just reading maybe literally the
4 LTR and thinking that engineered barriers are
5 institutional controls. It could have been as simple
6 as that. I'm not really sure, but it's sometimes hard
7 to keep track of all the different pieces of paper
8 that present an evolution of the implementation of the
9 LTR.

10 MR. IKENBERRY: I guess maybe I'm coming
11 a little bit more from a safety analysis perspective
12 too where those are clearly defined separately and
13 treated quite different.

14 MR. ROBERT JOHNSON: And I believe we felt
15 so too. So that's why it was clarified but the
16 language was allowing people to question it.

17 MR. IKENBERRY: To make that. Okay.

18 MR. ROBERT JOHNSON: It was a way of
19 trying to settle that issue and I think they did
20 settle it.

21 MR. IKENBERRY: Okay.

22 MR. ABELQUIST: I just have a positive
23 comment to share. I think the long-term control
24 license is the ideal solution for a difficult
25 situation. It maintains the unrestricted release

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1 option as clearly the preferred option and so from the
2 standpoint of incentivizing unrestricted release, it
3 does that. It helps the licensee to focus on I'd like
4 to get to unrestricted release. If I can't in the
5 short term, maybe short term is ten years, I have a
6 vehicle now.

7 When the LTR came out in the late '90s, it
8 was uncertain how unrestricted release was going to
9 work and I think this long-term control license is
10 really a very good vehicle to maintain that balance
11 between still incentivizing the preferred solution
12 which is let's to try to get to the unrestricted
13 release. But in the event that you can't because of
14 financial restriction usually, you have at least some
15 closure that you have decommissioned, but there's
16 still going to be this long-term durable institutional
17 control. So I really like the direction that things
18 have been going in the last few years.

19 MR. NAUMAN: I have a couple questions.
20 You mentioned getting involvement from the
21 stakeholders, the SSACs, for the various areas. What
22 if the licensee doesn't get buy-in from the
23 stakeholders and it is only a preferred option for the
24 NRC, but the licensee still wants to go down his own
25 path?

1 MR. ROBERT JOHNSON: I think the LTR and
2 the guidance is pretty clear that the requirements
3 seek advice from the affected parties, not get
4 agreement, not get closure, consensus. It also
5 requires the licensee to document what comments they
6 did get from their affected parties and how they
7 considered them. So it doesn't require consensus but
8 it does require accountability and explaining and
9 that's in general on the use of institutional
10 controls. I'm more reacting to this particular issue
11 of subdividing.

12 MR. NAUMAN: That's the fundamental issue
13 that I was getting at was the subdivision.

14 MR. ROBERT JOHNSON: Yes. Right.

15 MR. NAUMAN: And the advantages and
16 disadvantages of a subdivision.

17 MR. ROBERT JOHNSON: And I think in this
18 case, my own opinion, is their input was valuable and
19 it sort of made sense and when you look at the
20 tradeoffs, it's not necessarily a pure safety call
21 here. So it's sort of important I think in this case
22 to hear how they feel for that particular site. It
23 would be site specific and it may not matter at all
24 for some other sight, hypothetical site, but in this
25 case, it is important to those parties.

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1 MR. NAUMAN: Yes, and an example that came
2 to mind was say you have a power reactor that for the
3 near term you're going to have to worry about that
4 ISFSI that's going to be onsite that's going to
5 maintain your spent fuel. That's a small section of
6 the territory. You can release hundreds of acres of
7 the property unrelated to that and just maintain your
8 license for that or for that storage facility. It may
9 be in the licensee's best interest especially for the
10 locations of some of these facilities to want to go to
11 just maintaining that ISFSI and selling off the rest
12 of the property because of the location and the value
13 of the property.

14 Big Rock Point is a prime example. They
15 have lake front property there that's very valuable in
16 a very high demand area and they want to be able to
17 sell off their properties and subdivide. So in their
18 case, they may say the community doesn't buy in to
19 subdivision. They want to get rid of the whole thing
20 but we feel in our business perspective that it's the
21 best thing for us and we want to do it. And okay,
22 it's not the preferred method. They don't have the
23 buy-in but they can do it anyway. They can go in that
24 direction anyway. That's about it for now.

25 MR. ROBERT JOHNSON: Okay.

1 MR. DAROIS: I'm set.

2 MEMBER WEINER: I'm concerned about the
3 implementing the last resort of last resort and I was
4 going to suggest what you're really with the LTC and
5 the LA/RC is creating legacy sites. These are legacy
6 sites by another name. Isn't that correct?

7 MR. ROBERT JOHNSON: No, there are ways of
8 dealing with two legacy sites.

9 MEMBER WEINER: Okay.

10 MR. ROBERT JOHNSON: That is provided for
11 under the LTR.

12 MEMBER WEINER: That's right, but you are
13 admitting that you're dealing with these sites in a
14 fashion that makes them legacy sites.

15 MR. ROBERT JOHNSON: Other legacy sites to
16 begin with because they can't deal with the --

17 MEMBER WEINER: Yes. Okay.

18 MR. ROBERT JOHNSON: They don't have an
19 answer.

20 MEMBER WEINER: Okay. Let me get to my
21 point which is that just saying this is the last
22 resort of the last resort and saying we're going to do
23 this on a case-by-case basis, I think would be
24 supported by the former statement in the guidance that
25 you want to avoid or prevent or minimize the creation

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1 of legacy sites. You don't want -- This is something
2 that NRC doesn't want to do but will handle it if it
3 has to. That's the thing I was getting to.

4 MR. ROBERT JOHNSON: Yes, and we have to
5 improve our guidance. It's saying that right up
6 front.

7 MEMBER WEINER: Yes.

8 MR. ROBERT JOHNSON: It's the first thing
9 maybe they see.

10 MEMBER WEINER: Right. We don't want to
11 do this.

12 MR. ROBERT JOHNSON: We don't want to do
13 this. We're struck with some today. This is what we
14 have to do to deal with them.

15 MEMBER WEINER: The other question I
16 wanted to comment on was the subdivision question
17 where I think you're very wise to look at this on a
18 case-by-case basis and here if you have relatively
19 urban site, it's probably an option to be considered
20 if it's a site in the middle of nowhere and nowhere
21 cares. But if it's a relatively urban site, we've all
22 had experience with abandoned sites in a city and what
23 kind of a blight they can be. So if you can release
24 part of that site, it's probably a good idea not only
25 economically but just for the community as a whole.

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1 Those were the only comments I had. I
2 want to thank you though for a very enlightening and
3 thorough discussion of what is clearly a very
4 difficult issue.

5 MR. ROBERT JOHNSON: Thank you.

6 VICE CHAIRMAN CROFF: Dave Kocher noted
7 that we're stuck with institutional controls basically
8 whether we like it or not. That seems to be a given.
9 I'm going to suggest that some institutional controls
10 are more effective than other institutional controls.
11 By effective, I mean they have a higher probability of
12 persisting longer into the future and watching over
13 whatever the site is.

14 I think the guidance, it may not be
15 possible this time around, but you need to head in the
16 direction of providing guidance on let me call them
17 preferred or the preferences for institutional
18 controls and I'm talking about the case where the site
19 owner, the licensee, is setting them up. In the
20 guidance now, there's a list of the number of
21 possibilities, deed restriction, zoning and it goes on
22 down a list. But not all of those are created equal
23 and I think there is evidence and I think there can
24 probably be developed more evidence as to which ones
25 those work better or worse. You need to head in the

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1 direction of including that in the guidance to try to
2 get them headed in the right direction and as a basis
3 for your own decision making on whether their proposal
4 is a better one or a worse one. Enough said.

5 MR. ROBERT JOHNSON: I think that's a fair
6 comment. We wouldn't be able to get that into this
7 version, but it may be a future version to think about
8 that and to be able to maybe leverage off of some of
9 the other agencies' experiences that are evaluating
10 effectiveness of controls like EPA and others that use
11 them more than we do. We have very limited experience
12 with using them, but that's a good suggestion.

13 CHAIRMAN RYAN: All the presentations
14 today are very thought-provoking. So thanks to
15 everybody that did a great job giving us all this
16 information. As I think about the path forward, let's
17 assume the guidance is finalized and is out there
18 working, what's the agenda look like for sites that
19 will be decommissioned to which the LTR will be
20 applied in say the next five years? Can you give me
21 just some ball park?

22 MR. ROBERT JOHNSON: For the restricted
23 use sites?

24 CHAIRMAN RYAN: For the LTR as a whole?
25 How many sites are very simple and are terminated

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1 quickly versus some of the intermediate ones and then
2 the hard ones? There are probably some tears here.
3 But the reason I'm asking is I think it would be
4 interesting to think about now before the guidance is
5 finalized what sort of profile of information you're
6 going to capture about each one of the terminated
7 licenses because somewhere down the line whether it's
8 the financial assurance aspects or the monitoring and
9 modeling aspects or the engineered barriers aspects of
10 all the things that get used it would be really kind
11 of interesting to see if you could develop up front
12 some sort of an information profile for each one that
13 will go under this. Now's not a bad time to think
14 about it actually.

15 So I just challenge you to maybe think
16 about that. It may be too much work to get in the
17 guidance, but as you begin to apply it, it might be
18 interesting to think about because it might get at
19 some of the questions that Allen raised and David
20 raised and all of have kind of speculated a bit about
21 how things will work in the future if we can begin to
22 gather information and, of course, as a result of good
23 information gathering, we would make better decisions
24 as time goes on.

25 MR. ROBERT JOHNSON: We could also get

1 what you were talking about earlier or what Dave was
2 saying that for engineered barriers we really don't
3 have many sites. So it's this how much guidance, how
4 much detail is appropriate for the sites that we might
5 see in our horizon in the next five or ten years. In
6 other words, what should you target your guidance for?

7 CHAIRMAN RYAN: I've heard a couple of the
8 Commissioners talk about knowledge management and the
9 fact that there's a lot of folks in the agency that
10 are at or near or are retiring as we speak and so
11 forth. It would be very helpful, I think, to the
12 folks who are here 10 or 15 or 20 years from to have
13 a body of information of how terminations work and
14 whether it's worked well and what of the things we're
15 talking about this week and in this guidance would
16 really stand the test of time.

17 MEMBER HINZE: A couple of very brief
18 comments. I know that there is a desire and a need to
19 maintain flexibility as much as possible, but as I
20 look at the comments that relate to the LTC and the
21 LA/RC, it seems to me that it would be worthwhile for
22 you to go back and look at your specification of when
23 those are possible and to make certain that they are
24 as specific as possible so the LTC is not viewed as an
25 impossible means of avoiding the LTR requirements.

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1 There's this tradeoff between flexibility and
2 specificity and I think that would be worthwhile since
3 people are misunderstanding and these are
4 knowledgeable people that are misunderstanding that
5 perhaps you can use a greater degree of specificity.

6 The second comment is really a follow-up
7 I think to what Mike has just said and that is that as
8 we look at new nuclear facilities that the guidance
9 that is being provided here should be made readily
10 available or should be incorporated somehow into
11 licensing of the new nuclear facilities and I look at
12 some of the requests for permits for new nuclear power
13 plants. Let's make certain that this guidance is
14 thought about up front.

15 MR. ROBERT JOHNSON: I would say that I
16 know that idea is being thought of in our rulemaking
17 for preventing future legacy sites and lessons
18 learned, how do you get like you're saying new
19 applicants to be considering decommissioning up front
20 in their designs and application phase.

21 MEMBER HINZE: And they have so many
22 things to worry about as they prepare their licenses
23 that closing down isn't very high on the agenda, but
24 I think that this guidance is terribly important, very
25 important, for them to think about early in the game.

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1 MEMBER CLARKE: Just picking up on that,
2 I think you all know how the Committee feels about
3 that. We've made that suggestion in the first letter
4 that we wrote about starting with a clean sheet of
5 paper if you will and designing with the end in mind.
6 This is a great opportunity to do that.

7 This is a very difficult topic and all of
8 these are very difficult and as I listen to the
9 discussion, I thought back to a time when Allen and I
10 worked together on a committee that struggled with
11 these issues ten years ago I guess or even longer.

12 MEMBER HINZE: And you didn't solve them
13 then?

14 MEMBER CLARKE: We didn't. We didn't and
15 shame on us. But we wouldn't be here today if we had.

16 CHAIRMAN RYAN: You'd be rich.

17 MEMBER CLARKE: And we're still struggling
18 with them. But one comment and a question. I too
19 want to make a very positive comment. You began your
20 presentation by reminding us that you were taking a
21 graded approach to institutional controls and I was
22 very pleased to see that you also in your guidance
23 have graded approach to engineered barriers. I think
24 this is truly risk-informed guidance and I think you
25 really should be complimented for taking that

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1 approach. And quite frankly from where I sit, this
2 approach is very commendable compared to what other
3 people are doing, wrestling with the same issues and
4 trying to issue guidance and regulation for the same
5 kinds of problems.

6 The question I had is what about lessons
7 learned. You may be the wrong guy to ask that. but
8 could we get a brief status on where that is?

9 MR. ROBERT JOHNSON: Yes, I'll probably
10 need some help. Drew?

11 MR. PERSINKO: Hi, my name is Drew
12 Persinko, Section Chief. Last time we met with you
13 was June last year and we did have a brief
14 presentation by Rafael Rodriguez on lesson learned.
15 Since then, we have formulated an approach since then.
16 What we have done is we took a lot of your comments
17 last time. I remember you cautioned us in a number of
18 ways about this a very large effort, be careful and
19 you pointed out a number of potential pitfalls for us
20 to consider because at that time I think as I like to
21 say, I think we were going to eat the whole elephant
22 ourselves.

23 This time though we formulated an approach
24 where we formed a, we have a, I don't know if you want
25 to call it a working group, but it's a group composed

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1 of industry groups such as NEI, Fuel Cycle Facility
2 Forum, Organization of Agreement States and we've
3 some, three of four, meetings on the subject and we're
4 working as a group now trying to figure out what
5 pieces of the elephant each of us want to eat and how
6 we're going to do that, too.

7 We don't have our answers yet, but we at
8 least have an approach. We've met with Fuel Cycle
9 Facility Forum, the group in its entirety, several
10 times. EPRI is another member of the group.

11 The first step we've done right now though
12 is we've put a bibliography together of all the
13 existing lessons learned that the group is aware of.
14 It's on our website right now of all the documents
15 that we've compiled. We have some. EPRI has some.
16 Fuel Cycle Facility Forum had some. NEI had some. So
17 that was our first step to just try to figure out all
18 the material that's out there.

19 The second step is most likely going to be
20 to try to sift through those documents and sift our
21 lessons learned and then categorize them. We don't
22 know exactly how we'll do that yet, but we'll sift
23 through them and we'll try to have to figure out what
24 level do we want to get into in lessons learned as we
25 sift through it and how we're going to do that and who

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1 is the owner of what lessons learned.

2 And then we're also trying to figure out
3 a way of capturing them for the future. What's the
4 best way to do that and we're doing it right now we're
5 anticipating on a website. We're also talking about
6 maybe every so often putting what we have on the
7 website onto a CD and/or maybe also hard copy so that
8 periodically down the road, we'll have some hard copy
9 to back up what our website has because it's very
10 possible at some point in time maybe the website will
11 go away. You never know.

12 But that's what we have in mind right now
13 and that's what we've done since we last met with you
14 in June. And we had several -- There was a recent
15 conference, the Waste Management Conference out in
16 Arizona. There was a whole session on lessons
17 learned. Dan Gillen was on a panel at that meeting
18 and so were some of the members on the group, Fuel
19 Cycle Facility Forum, where they talked about it and
20 tried to get any inputs from anybody who was attending
21 that session.

22 I guess that's our status report right
23 now. Still more to come, but I think we've changed
24 our approach since the last time we've met with you
25 and a large reason was that probably because of the

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1 cautionary statements we received from you.

2 CHAIRMAN RYAN: When do you think would be
3 a good, and I'm not really pressing for this today,
4 tomorrow or next month, but when do you think we could
5 anticipate an update on where you are at a time when
6 it's right for you?

7 MR. PERSINKO: I think we could do that
8 maybe the spring/summer time frame.

9 CHAIRMAN RYAN: Okay.

10 MR. PERSINKO: And we could do it earlier,
11 but I think the spring/summer we might have more to
12 tell you.

13 CHAIRMAN RYAN: No, whenever it's better
14 for you, that's fine. Somewhere in the next six
15 months sounds like.

16 MR. PERSINKO: Yes, I think so.

17 CHAIRMAN RYAN: Okay. That's great.
18 Okay.

19 MEMBER CLARKE: Drew, thank you.
20 Appreciate it.

21 MR. PERSINKO: Thanks.

22 MEMBER CLARKE: Dr. Hinze has another
23 question please.

24 MEMBER HINZE: If I might. In my mental
25 notes, I believe Duane said early on in the morning

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1 that few comments were received from licensees. Is
2 that correct? Is that mental note correct and if it
3 is correct, why didn't you receive many comments from
4 the licensees? What are the implications of that in
5 terms of this whole process?

6 CHAIRMAN RYAN: And you though you were
7 done. That was four questions.

8 MEMBER HINZE: Answer those in any order.

9 MR. SCHMIDT: Most of those might be is
10 we'll think some more about that. I wanted to just
11 look at my list of commentors. We did get comments
12 from Connecticut Yankee. We did get comments from
13 Kennecott Uranium Company. And that's who we got
14 comments for from licensees.

15 CHAIRMAN RYAN: How about agreement state
16 licensee? Is that in your tally?

17 MR. SCHMIDT: That's it that I'm seeing.

18 CHAIRMAN RYAN: Two?

19 MR. SCHMIDT: Right.

20 MR. NAUMAN: And Connecticut Yankee will
21 soon be out of business. It's all those other people
22 that have the long-term effects here that seem not to
23 be paying attention.

24 MR. SCHMIDT: I think that's a thought-
25 provoking question especially about what are the

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1 implications of that. I was a little bit surprised.
2 I'm not sure what to think about implications. It's
3 a good question.

4 MEMBER HINZE: The Commission very much
5 pushed for these public comments and I think they're
6 going to be surprised that there are so few licensees
7 that are commenting and frankly, I don't know how to
8 read that. But it does have implications in terms of
9 what you are responding to.

10 MR. SCHMIDT: It certainly does. Robert,
11 go ahead.

12 MR. ROBERT JOHNSON: If I could just add
13 a comment -- mentioned and you were all in attendance
14 in their workshop in April. There was a lot of
15 attendance there and licensees there. So just
16 speculating, there was interest and there was feedback
17 provided in that workshop. So that's a good thing
18 that we had that also as another form of providing
19 comment instead of just the written comment.

20 CHAIRMAN RYAN: You know it could be
21 possible feedback in that after the workshop and the
22 other input that you have received and took to your
23 writing and the draft that you got it right. That
24 could be.

25 MEMBER HINZE: Right. Half full.

1 MR. ABELQUIST: I think from my
2 perspective a lot of the issues we've been talking
3 about today are pretty fine issues and the audience
4 that they apply to is pretty small. I think a lot of
5 the major decommissioning issues are largely settled
6 and the regulated community is pretty happy with the
7 guidance that's out there. That's my take on it.

8 MEMBER HINZE: That's an important
9 implication.

10 MR. DAROIS: I think also that of the
11 licensees that were in attendance in April I think a
12 lot of traction of them were somehow actively in
13 decommissioning. Since then, Maine Yankee has
14 effectively gone away. Big Rock Point is just about
15 gone. I mean they're not going to -- Connecticut
16 Yankee responded, but Yankee Road didn't. I don't
17 know how many of the total, but I know there was a
18 fair amount that were in the decommissioning world and
19 I don't recall seeing too many from the nuclear power
20 plant side operating nuclear power plants in
21 attendance. I could be wrong, but I don't remember it
22 that way.

23 MEMBER CLARKE: Any other questions?

24 CHAIRMAN RYAN: Use the microphone. Tell
25 us who you are.

1 MR. DIAS: I am Antonio Dias from the
2 Expansion Project Office and the only question that
3 came to my mind when you mentioned that you were
4 surprised that you got very few comments from the
5 licensees was could it be that licensees were using
6 other venues to express some of these comments like
7 NEI. You mentioned that you had meetings with NEI.
8 NEI tends to be very active in expressing their ideas.
9 In general, they actually represent any ideas that
10 they've heard from the licensees, from their own
11 members. So not that I know, but it could have been
12 that in somewhat disguised manner you did hear
13 comments from licensees. That's what I was thinking.

14 MEMBER CLARKE: Thank you. Any other
15 questions? Okay. Let's take a break and we're a
16 little ahead of schedule. Let's come back at 4:10
17 p.m. and wrap up. Off the record.

18 (Whereupon, the foregoing matter went off
19 the record at 3:54 p.m. and went back on the record at
20 4:11 p.m.)

21 MEMBER CLARKE: On the record. Okay.
22 Let's resume please. This last section is a
23 roundtable discussion. There are a number of ways we
24 could approach this. At some point, we definitely
25 want to hear from our panel members as to a summary of

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1 their thoughts and their suggestions as we move
2 forward. We could do that now. We could do that
3 later. Do you want to start with that?

4 CHAIRMAN RYAN: Sure.

5 MEMBER CLARKE: Okay. I think that's a
6 little bit of a short warning, but they were with us
7 once before and know how we work. Okay. Let's start
8 with that if you could. Let's start with Eric.

9 MR. DAROIS: Thank you for the opportunity
10 to join you folks again for the second time. Overall,
11 I think the guidance is coming together quite well.
12 We went through an interesting evolution that started
13 in April with the public meeting and have been through
14 it since then. That's my general overall comment. I
15 think this is going on the right track.

16 Of course, my favorite topic is one of
17 Duane's favorite topics and that's the whole issue of
18 onsite disposal in terms of where we are today and
19 what impact all of this may have on operating
20 facilities in existing licensees. So I'm not going to
21 belabor those comments again, but I think that
22 certainly requires some consideration, taking a look
23 at where that belongs in the regulatory scheme of
24 things and all that we discussed earlier. With that
25 said, I'll turn it back over to Tom.

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1 MEMBER CLARKE: Okay. And we'll have
2 discussion after we have from each of you as well.
3 You folks work together very synergistically I've
4 observed. So you'll have an opportunity to tell us
5 again. Tom.

6 MR. NAUMAN: Like Eric, I would like to
7 thank everyone for having the opportunity to be here
8 and participate in this. It's always informative and
9 enlightening.

10 MEMBER HINZE: Go Solucies (PH).

11 MR. NAUMAN: Exactly. Well, they're kind
12 of out now. You can't get everything in life you
13 know. Anyway, we hit upon the topic that cut near and
14 dear to my heart a little bit and that's the lack of
15 support or participation by the utilities here. I
16 think in our last discussion in June I pointed out
17 that decommissioning wave, the first wave, is coming
18 to an end. It's coming to a close and all the
19 utilities since they've gotten in relicensing their
20 plants, this has drifted off of their immediate
21 horizon and off into the future somewhere.

22 They're not particularly focused on
23 decommissioning and how it will affect them. They've
24 learned enough over the last eight years that they
25 probably have a pretty good handle on how to keep

1 track of their spills, their 7075(g) record keeping
2 and their estimating and their updating of their
3 decommissioning estimates. So I think across the
4 board they have a good handle on the business and they
5 just don't see it coming any time soon, so they're not
6 overly concerned or overly worried about it. But this
7 is a great opportunity to capture lessons learned and
8 I'm glad that topic came up. I think everybody
9 pulling together and getting all the information they
10 can out of this wave and laying the foundation for the
11 future is a critical thing to do and I support that
12 idea quite a bit.

13 Segmentation and partial release and full
14 release of the sites, the only concern I see is the
15 online instances at the ongoing plants and there's not
16 going to be anything critical happen on those in the
17 near future. So release of the rest of the site like
18 they've done at Maine Yankee and other places is a
19 good direction to follow and I think it's probably a
20 good example for you to include.

21 Other than that, I would like to point out
22 that decommissioning in the industry has been done
23 very safely. A lot of the initial concerns in the
24 business were over total dose, over safety, because
25 there's a different type of work. But it's been done

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1 very safely across industry and very effectively and
2 some of the lessons learned that we can pick up here
3 they're already looking at to implement over in the UK
4 for their wave of work that's coming. I comment your
5 efforts to pull this together and get a solid guidance
6 for the future. That's all I have to say.

7 MEMBER CLARKE: Thank you, Tom.

8 MR. ABELQUIST: I appreciate the
9 opportunity to listen to the presentations as well.
10 I think one area that I want to spend a little time
11 addressing is the one that I was initially concerned
12 about and that is the intentional mixing of
13 contaminated soil and I agree with the comments, I
14 guess there were comments on both sides of this issue,
15 but the comments that address the concern of mixing in
16 clean soil. That's certainly problematic in my
17 opinion as well.

18 But I think there's another use of
19 intentional mixing that it wasn't obviously to me
20 until my second read on this whole issue and that is
21 if you have a burial and let's say it's a low-level
22 burial and in fact you know where it is but you don't
23 expect there to be a whole lot of contamination. You
24 start putting in some characterization sample
25 locations and maybe you get a couple of hits. Maybe

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1 10, 15 percent of your hits actually find anything
2 above background.

3 But the total volume of soil could easily
4 be thousands of cubic meters and you can't just adopt
5 an approach that says let's just keep sticking more
6 and more bore holes in because you're going to
7 continue to end up with a similarly low hit rate and
8 ultimately, you get to the point where if we're ever
9 going to characterize this well enough, we need to dig
10 it up because we just can't access the discrete nature
11 of the problem by continuing to sample with bore.

12 So if you adopt this intentional mixing,
13 what that allows for is a way to remove soil and when
14 you do find the discrete source terms, if you will,
15 you could apply ALARA by saying we're not going to mix
16 these into it. Now that we've found our treasure, so
17 to speak, we deal with it. But ultimately, you're
18 going to end up with 90 percent or more of this former
19 burial that's really fine, maybe some minimal
20 contamination.

21 I think if you mix that back up and put it
22 back in the hole you've done two things. One is
23 you've applied ALARA. You've removed some of the
24 higher level contamination and you certainly have
25 provided a better characterization of that area. If

1 you just continue the approach of sticking bore holes
2 in the ground, you're never going to have a real
3 satisfying assessment of what the source term is.

4 When I read through the guidance on
5 intentional mixing again, it seemed to me that that
6 application to facilitate characterization was one
7 that initially had escaped me. So I don't see it as
8 attractive from the standpoint of reducing the
9 contamination to put it back in, but certainly to help
10 characterize what's there and then applying ALARA when
11 you do find the more discrete piles of whatever it is,
12 debris or barrels. You can remove those and then put
13 everything back in and I think that might be an
14 application as well to consider.

15 MEMBER CLARKE: Thank you.

16 MR. SCHMIDT: Sorry. Just a quick
17 response. I hadn't thought of that and thought of it
18 that way either. I think that could be useful in
19 certain cases.

20 MR. IKENBERRY: We've seen some of the
21 initial changes in supplement one to the draft and the
22 ones I've read in there look very good. I had read
23 that first, pieces of it, and some of the issues that
24 were brought up in the comments that need further
25 explanation I think have been addressed very well in

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1 the initial changes to the supplement. That effort is
2 going very well, what we've seen so far.

3 I think one thing that we talked about on
4 the onsite disposal of the radioactive materials it's
5 worth looking at keeping all the options in that for
6 some of the, Eric and I had talked about, long-lived
7 radioactive material and I think for those in
8 particular that it's definitely worth taking a look at
9 those as well.

10 Richard Johnson had mentioned in the
11 restricted use and institutional controls, it came up
12 only at the very end about the risk-informed graded
13 approach and that's in my opinion a philosophy to live
14 by really in the business that we're in and I think
15 that can be applied throughout. I think that that is
16 implicitly done for the onsite disposal and that's
17 reflected all through here.

18 You might be able to emphasize that more
19 throughout the entire supplement because that's really
20 what you're doing here. I think that's an excellent
21 philosophy and approach to the work that could be
22 emphasized more. I think everything is looking very
23 good with the direction you're going.

24 MEMBER CLARKE: Thank you. David.

25 MR. KOCHER: I certainly learned a heck of

1 a lot here today and probably gave back very little.
2 A couple of themes that occurred to me that I'm sure
3 the NRC is aware of. In at least a couple of the
4 areas that we talked about, it seemed to me that buy-
5 in by the public and other stakeholders is really
6 crucial, not crucial, important and very helpful to
7 the process, certainly selecting whatever scenario
8 you're going to chose to base your decision on.

9 In the guidance, I don't think you want to
10 really even pretend that you're projecting what is
11 going to happen even a 100 years from now let alone
12 1,000 years from now in the way of potential exposure
13 situations. We are developing reference assumptions
14 if you will about hypothetical things and you want
15 those reference assumptions to be reasonably
16 representative of a suite of things that might
17 actually happen. But there should be no pretense that
18 we're estimating real doses to real people. So public
19 buy-in on that is very helpful.

20 An idea that I first heard elucidated by
21 Charles McCumbey had to do with the 10,000 year
22 business in the high-level waste area where the way he
23 put it to present this to the public is that you're
24 pretending that you put waste in the ground 10,000
25 years ago and then you're telling the public what is

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1 happening now. That is a way to kind of frame this.
2 But get public buy-in on this because the scenario
3 obviously can have a great deal to do with what an
4 allowable level of residual radioactivity is to meet
5 a free release criterion. It can change a lot.

6 I wasn't clear in the discussion of this.
7 It sounded like you would be investigating less likely
8 scenarios like a resident farmer say or a guy with a
9 garden in the backyard. It wasn't clear to me how
10 analyses of those scenarios would factor into a
11 decision when say a base case was a golf course or an
12 industrial use or a commercial use or something like
13 that. I don't know the extent to which the guidance
14 would need to be prescriptive about this, but I just
15 didn't get a sense of how doses in there other
16 scenarios would factor in. What happens if it's 20
17 millirem in your preferred scenario but it's 500 in a
18 worst case scenario? What do you do about that?

19 There are certainly possibilities here for
20 what I call gaming the system if you're not careful
21 and this is something that NRC staff is clearly aware
22 of. The whole business about intentional mixing and
23 the whole business about onsite disposal, continue on
24 the path of prescribing these in such a way that
25 people can't game the system, no end runs around Part

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1 61, that kind of thing.

2 But quite honestly, I didn't hear anything
3 here today that I thought was a show stopper,
4 something that was going to bring this thing to a halt
5 in its tracks. The staff is clearly very thoughtful
6 about all of these and I just say keep on keeping on.

7 MEMBER CLARKE: Thank you. Let's open it
8 up. Any others?

9 MEMBER HINZE: This may come across as a
10 criticism and I guess it is, but it's really a
11 recommendation too. It seems to me that I've heard
12 slippery slope today from someone. I think there's a
13 lot of room for misunderstanding in this particular
14 guidance, things like mixing in clean soil,
15 preservation of caps, misunderstanding about
16 developing more legacy sites, etc.

17 I think what that says to me in the
18 comments that we've heard is that the staff is going
19 to have to be very careful that they describe these
20 things with a lot of clarity and there needs to be a
21 preamble on many of these areas explaining what the
22 end game is here, what you're really trying to
23 accomplish. Maybe all that is written in there but it
24 isn't written in there by virtue of the comments that
25 we've seen. A clarification to me, I've heard that,

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1 maybe I've been tuned to it, but clarification is
2 probably one of the most used words today and I
3 frankly think that's telling the staff something and
4 telling us something.

5 MEMBER CLARKE: Ruth.

6 MEMBER WEINER: I was, just to follow on
7 the clarification question, also disturbed once it was
8 mentioned that you did not have more direct comments
9 from licensees and recognizing that there are other
10 venues, there are other ways in which licensees can
11 make input. I think it's going to be very important
12 that termination, decommissioning, be considered up
13 front that somehow this guidance becomes incorporated
14 or attached or in some way proposed to new licensees.

15 And I'm sure that NRC has ways of doing
16 it. You don't want to tell them you have to do this,
17 you have to do that. But you do want to make them
18 aware early on of the problems that can occur with
19 decommissioning and they have to consider it up front.
20 I remember Commissioner Merrifield made this point at
21 the workshop that it should be part of building a new
22 facility.

23 So I would almost encourage you to seek
24 out more comments from licensees if that's possible to
25 do and see what they do think because I think you just

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1 have a limited view here. Thank you. Thank you, Jim.

2 MEMBER CLARKE: Yes. Mike.

3 CHAIRMAN RYAN: I just want to add my
4 thanks to the NRC staff for really informative
5 presentations and discussions and I want to especially
6 thank our expert panel members for taking their time
7 and talent in bringing it to us today and I really
8 appreciate the positive comments. We embarked with
9 Robert Johnson and company back before the
10 decommissioning public meeting that we were really
11 starting a new way for us to gather information and to
12 help us offer advice to the Commission and it's great
13 to hear such positive feedback that all that hard
14 work, our work contemporaneous with the work of the
15 staff, really has resulted in something that you see
16 as good and getting better as it comes to bear fruit.
17 So we really appreciate everybody's input and the
18 staff's cooperative effort with us to make it happen.

19 But I want to add just my special thanks
20 for you taking your time and energy to be with us on
21 these two events. We really appreciate your input.
22 I believe it's made it a lot better. We appreciate it
23 and it helps us give better guidance to the
24 Commission. So thanks a lot.

25 MEMBER CLARKE: Okay. Allen.

1 VICE CHAIRMAN CROFF: I don't have any
2 thoughts right now.

3 MEMBER CLARKE: I certainly want to thank
4 everyone too. It was very tremendously done and
5 before we close, I would like to ask Drew and Duane
6 and Robert if they would like to share some comments
7 as well.

8 MR. PERSINKO: Yes, I would. First of
9 all, I just want to say that I'm going to add a little
10 bit about what we talked about, lack of participation
11 by utilities. Before we had the workshop last spring,
12 we had, and NMSS had gone over to NRR and made
13 specific contact with one of the division directors
14 over there in charge of operating reactors, and
15 specifically had informed the operating utilities
16 through our contacts over in NRR. So I was a little
17 disappointed not to see many any utility
18 representatives from operating plants at the workshop.
19 But I know you guess it's the choice of resources and
20 where an operating plant wants to put their emphasis.

21 I also wanted to mention there was also
22 quite a bit of talk today about getting in on the
23 ground floor for the design of new plants. We have
24 been working more closely with NRR with trying to
25 factor in our lessons learned into the new plant

1 design and in fact, they have a standard review plant
2 that is being developed and it's well along being
3 developed I'm told and they actually have a hold point
4 for us to insert some information in there. What
5 exactly we're going to insert right now, I'm not
6 exactly sure. But they're waiting for us to work with
7 them on that now.

8 Now there seems to be a little bit of a
9 lag here. I mean they're really to roll with the SRP
10 and we're kind of in the formulation stages a bit with
11 our lessons learned program. So we have a lot of
12 lessons learned but we don't have it in the format we
13 exactly want right now. But yet, we will be providing
14 input to NRR so that they can incorporate it into the
15 standard review plan for the design of the new plan.
16 I just want to let you know that.

17 We're working -- Actually in one of our
18 meetings that I mentioned with the utility with our
19 working group on lessons learned, we had a
20 representative from NRR actually at one of those
21 meetings. So we've kind of crossed the divide so to
22 speak between NRR and NMSS on this issue.

23 As far as today's meeting goes, I would
24 like to say that I think it was a very good meeting.
25 I think there were a number of good comments today

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1 made by the Committee and by the Working Group and I
2 think a number of those we'll definitely incorporate
3 into our guidance directly and others we'll look at
4 carefully. I would also like to add though that if
5 the Committee decides to write a letter on Friday,
6 we'll be anxiously awaiting to see what's in the
7 letter as well. But I think it was a very good
8 exchange of information today and I thank you.

9 CHAIRMAN RYAN: I'm going to guess you can
10 plan on us writing a letter.

11 MR. PERSINKO: I wanted to leave the
12 option open.

13 CHAIRMAN RYAN: We'll talk Friday about
14 bullet points as we collect our thoughts at that time.
15 But you can plan on a letter coming forward and I
16 think a lot of it will be the positive things we've
17 talked about and some of the suggestions we've pretty
18 much covered today. It will be up to Jim to organize
19 that and give you some preview on what's coming. But
20 thanks very much.

21 MEMBER CLARKE: Thank you, Drew. Duane,
22 Robert. Let me again thank you, Drew and Duane and
23 Robert and Chris, who isn't here for your
24 presentations. As I said earlier, we appreciate very
25 much the early involvement we had in this process and

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1 the continued involvement. And we look forward to the
2 next round. We will be writing a letter as our
3 Chairman said and we'll spend the time Friday talking
4 about how we might approach that and what that might
5 include and we would welcome your presence in that
6 discussion as well.

7 Let me again thank the panel, all of you.
8 For all of you, this is your second working group
9 meeting and for one of you this is your third. He's
10 the one smiling over there. He's anonymous but you
11 can figure it out. You've been very gracious with
12 your time and you've been very helpful in this process
13 and we really appreciate it. Mike Lee, thank you for
14 pulling this together and organizing this and making
15 it possible. If there isn't anything else, I'll turn
16 the meeting back to our Chairman.

17 CHAIRMAN RYAN: And with that, Jim, thank
18 you very much for any excellent working group meeting
19 and if there are no other comments, last chance, we'll
20 adjourn for the afternoon and again thank everybody
21 for their participation and excellent work and great
22 input. Thank you all very much. Off the record.

23 (Whereupon, at 4:36 p.m., the above-
24 entitled matter was concluded.)

25

CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: Advisory Committee on

Nuclear Waste

168th Meeting

Docket Number: n/a

Location: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.



Charles Morrison
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Update on Status of NUREG-1757 Development

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Presented to:
Advisory Committee on Nuclear Waste, March 22, 2006

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Background

- License Termination Rule implementation issues
- Stakeholder involvement in guidance development
 - Decommissioning Workshop, April 2005
 - State Working Group
 - ACNW Working Group, June 2005
- NUREG-1757, Draft Supplement 1 issued for public comment in September 2005
- Public comments were received from various organizations, licensees, States, and individuals
- Staff appreciates the comments

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Purpose of Meeting

- Obtain input from ACNW Working Group on public comments and staff's potential path forward for addressing comments and finalizing the guidance

- Key issues:
 - realistic scenarios, intentional mixing, removal of material after license termination
 - onsite disposal under 10 CFR 20.2002
 - engineered barriers
 - restricted use and institutional controls



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Focus of Meeting

- Substantive public comments – question policies in guidance or may result in changes to guidance
 - In finalizing the guidance, staff will consider all the public comments and will prepare responses

- Staff's current thinking and preliminary plans for finalizing the guidance
 - The planned revisions for the guidance may change with additional consideration of the issues



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Future Plans

- Share results of the public comments with the Commission by June 2006
 - Response to SRM-SECY-03-0069
- Issue final guidance in September 2006

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Reasonably Foreseeable Land Use Scenarios

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Presented to:
Advisory Committee on Nuclear Waste, March 22, 2006

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Reasonably Foreseeable Land Use: Overall Concepts

- Modification or expansion of current sections of NUREG-1757, Volume 2
- Modification of tone in guidance from alternate scenarios being the exception to site-specific scenarios being a valid area of flexibility for the licensee
- Additional guidance on reviewing competing scenarios and unlikely scenarios to risk-inform the decision

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Summary of Public Comments

- Three States (CO, NJ, NY) and two private organizations provided comments
- Some public comments supported the policy change
- No comments were provided that indicated no support for the policy
- Other comments can be responded to by revising the guidance accordingly, without changing the policy as stated in SECY-03-0069

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Public Comments (cont'd)

- A couple commenters confused the time frame for establishing the scenario (100 years) with the analysis time frame (1000 years)
- One comment suggested sites using reasonably foreseeable land use should have deed restrictions or other devices to limit the land to only the assumed reasonably foreseeable land use.

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Intentional Mixing of Contaminated Soil

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Advisory Committee on Nuclear Waste, March 22, 2006

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Summary of Draft Guidance on Soil Mixing



- Proposed new Section 15.13 of NUREG-1757, Vol. 1
- Provided guidance on continuing use of mixing to meet waste acceptance criteria
- New guidance on use of soil mixing to meet LTR criteria
- New guidance on use of soil mixing to meet LTR criteria, in limited circumstances, on a case-by-case basis
 - use of mixing should be part of an overall approach to cleanup at the site that includes ALARA and seeks to achieve unrestricted use
 - proposed limitations on use of clean soil and on footprint of contaminated areas



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Summary of Public Comments on Intentional Mixing



- Three State governments, one licensee, one solid waste management group, and one consultant provided comments.
- Some support intentional mixing and some oppose, to varying degrees.
- Additional flexibility was proposed, based on LTR not prohibiting mixing and based on Commission votes
- Potential issue about using mixing to change the waste classification: one commenter supported flexibility to use mixing to change waste classification, and one commenter was against.



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Staff Considerations on Mixing

- Many of the comments may not require significant changes to the guidance.
- Staff understands that the LTR provides performance-based dose criteria, and does not prohibit soil mixing to achieve the criteria. Staff may agree with suggestions that would provide more flexibility in use of mixing.
- Staff plans minor changes in response to several comments.
- Staff is considering appropriateness of allowing use of mixing to change the classification of wastes.

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Removal of Material After License Termination

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Presented to:
Advisory Committee on Nuclear Waste, March 22, 2006

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Removal of Material After License Termination

- Issue
 - Criteria for unrestricted release of solid materials before and after license termination is inconsistent
- Draft Guidance
 - Clarifies what building structure materials may be left onsite at license termination
 - Provides three acceptable approaches

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Removal of Material After License Termination (2)

- Public Comments on Guidance
 - Request clarification of acceptable approaches
 - Some wanted concentrations values instead of dose
 - Some confusion about what dose criterion applies to material left onsite at license termination that might be removed from the facility after license termination
- Path Forward
 - Staff plans to evaluate whether any changes are need to alleviate confusion, but does not plan significant changes to the guidance

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Onsite Disposal of Radioactive Materials

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Presented to:
Advisory Committee on Nuclear Waste, March 22, 2006

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Summary of Draft Guidance on Onsite Disposals

- Guidance proposed for Section 15.12 in Vol. 1
- Included three options:
 - Current approach of a “few mrem” per year
 - Up to 100 mrem/year, with additional financial assurance
 - Up to 25 mrem/year for mainly short-lived nuclides without additional financial assurance
- Guidance limited to specific onsite disposal issues
 - SECY-03-0069 and SRM identified Options
 - remind licensees of other requirements

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Comments on Guidance

- Received comments from
 - Four State governments (CO, NJ, NY, WA)
 - Two public interest groups
 - One consultant
- Recommend rulemaking versus guidance
- Oppose the concept of onsite burials
- Financial assurance shouldn't be the only method to prevent legacy sites
- Regulatory experience to support guidance is very limited

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Staff Considerations

- Agree in general with many of the comments, especially as related to Option 2
 - allowing onsite disposals does not prevent future legacy sites
 - financial assurance requirement may not be sufficient to prevent legacy sites
 - rulemaking suggested, rather than guidance
- Staff is reviewing recent requests for onsite disposals; initial thought is little need for disposals at higher doses
- Staff is considering rulemaking alternative
- Importance of preventing future legacy sites versus importance of flexibility

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Proposed Revisions to Guidance

- Current thought is to revise to present one option:
 - Continue the "few millirem" policy
 - Define a "few millirem" as up to 5 millirem/y
 - Clarify that doses are for current uses of site and future exposures after license termination for unrestricted use
 - Consider other requests on case-by-case basis
- Prepare Commission Paper
 - Describe change from what Commission approved

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Engineered Barriers

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Presented to:
Advisory Committee on Nuclear Waste, March 22, 2006

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**Summary of Public Comments on Draft
Guidance for Engineered Barriers**

- Two State governments (CO, NJ) and three other groups provided comments.
- The main areas of concern were:
 - the summaries of experience for various barrier types were not up to date,
 - the summary of UMTRA experience was not accurate,
 - engineered barriers should not be used at unrestricted release sites.
- Comments were received on other items.
- Staff appreciate the comments provided.

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**Path Forward on the Guidance for
Engineered Barriers**

- The guidance does reflect that use of engineered barriers at unrestricted release sites is not preferred.
- The staff plans to enhance the guidance to reflect that it can be extremely costly and challenging to justify the long-term passive performance of an engineered barrier, which would be needed for unrestricted release.
- The staff believe that lessons have been learned from early UMTRA experience, and plans to emphasize that the UMTRA experience is being presented from a long-term stability perspective (erosion control).
- A more detailed summary of UMTRA experience can be provided.

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Path Forward on the Guidance for Engineered Barriers

- The staff agrees that the summary of experience and potential ranges of performance for engineered barriers can be enhanced and updated, however the staff has not yet decided the exact level of detail that is appropriate for this guidance.
- The staff plans to provide examples of natural analogs to support the justification of the long-term performance of engineered barriers.
- Evapotranspiration covers and geosynthetics will be covered in greater detail in the revision to the guidance.
- The differences between 10 CFR Part 20 and Part 40, as well as the compliance time for decommissioning are outside the scope of the engineered barrier guidance.

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Restricted Use and Institutional Controls

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Presented to:
Advisory Committee on Nuclear Waste, March 22, 2006

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Summary of Draft Guidance

- Risk-informed graded approach
- New institutional control options involving NRC
 - Long-term control (LTC) possession only license
 - Legal agreement and restrictive covenant (LA/RC)
- Advice from affected parties, total system approach for sustaining protection, and risk-informed approach for long-term monitoring

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Summary of Public Comments

- Comments on the License Termination Rule (LTR) and other NRC regulations
- Most comments on the LTC license and a few on LA/RC and advice from affected parties
- No comments on risk-informed graded approach, total system approach, and long-term monitoring

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Key Comments on the LTR and Process

- Duration of institutional controls and justification for indefinite durability
 - LTR Statements of Consideration: “Requiring absolute proof that such controls would endure over long periods of time would be difficult, and the Commission does not intend to require this of licensees. Rather, institutional controls would be established by the licensee with the objective of lasting 1000 years to be consistent with the time-frame used for calculations.”
 - “Although the Commission believes that failure of active and passive institutional controls with the appropriate provisions in place will be rare, it recognizes that it is not possible to preclude the failure of controls. Therefore, in the proposed rule, the Commission included a requirement that remediation be conducted so that there would be a maximum value (“cap”) on the TEDE from residual radioactivity if the institutional controls were no longer effective in limiting the possible scenarios or pathways of exposure.”



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Key Comments on the LTR and Process

- Consistent analysis of institutional controls and engineered barriers
- Perceived inconsistencies with other regulations
- Preference for rulemaking to implement the LTC license



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Key Comments on Draft Guidance for LTC License



- Support and lack of support for LTC license
- Proliferation of restricted use sites
- LTC license should not provide a means of avoiding LTR requirements
- Case-by-case approach for subdividing a privately owned restricted use site
- Flexibility for future changes
- No license termination results in no completion of decommissioning

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Key Comments on Draft Guidance for LA/RC



- LA/RC justification
- Use of environmental covenants

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