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1 UNITED STATES OF AMERICA

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3 NUCLEAR REGULATORY COMMISSION

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5 PUBLIC WORKSHOP 2 ON

6 UNIQUE WASTE STREAMS - DEPLETED URANIUM

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8 THURSDAY,

9 SEPTEMBER 24, 2009

10 + + + + +

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P R O C E E D I N G S

(8:44 a.m.)

MR. CAMERON: Good morning, everyone. Welcome back to the second day of our Workshop on the NRC rulemaking on establishing site-specific performance assessment criteria for the disposal of depleted uranium, and other unique waste streams. I heard a lot of good discussion yesterday, and I'll do a quick summary of some of the points that I heard later on, before we get to the first substantive session. But we have several items on the agenda today, as well as some parking lot issues that we'll want to finish up with, if we don't address them during the normal course of business today. And I'll just give you a list of some of the parking lot issues that we have. And our court reporter, Mike, said that we probably need a whole parking structure now, not just a lot.

At any rate, the availability of the regulatory analysis for comment was brought up. The regulatory analysis is part of the NRC rulemaking package. And we'll see if we can get some clarification on that today. There was a point about ground water. Ground water pathway is redundant. David brought that up. Peter had a different view.

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1 I'm not sure that we ventilated that discussion. And
2 if it's important to do so, we will, and I hope you'll
3 let me know about that.

4 There was a point about the oxidizing
5 reduction environment. I don't know if we really
6 devoted much time to that. This is more of a
7 question, does the TEDE, Total Effective Dose
8 Equivalent, okay, does that include Radon? And,
9 David, you're saying?

10 (Off mic comment.)

11 MR. CAMERON: Okay. That's the question.
12 We'll see if we can answer that.

13 There is a whole issue of validating
14 models. And, as you'll remember, Dave talked about,
15 and I think Drew also talked about support for models,
16 in addition to validation. The first two sessions we
17 have today are going to be on modeling, so we'll get
18 to that.

19 There was an issue brought up from the
20 audience about, basically, environmental justice.
21 Where does that get considered in these types of
22 rulemaking efforts? And, classically, it's done as
23 part of the NEPA analysis, but I'm not sure how much
24 we get into that in an environmental assessment, as
25 opposed to an environmental impact statement. So,

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1 that's in the parking lot, and I'm hoping that our
2 lawyers and technical staff can talk about -- can
3 confer, and we can get some answers on that.

4 What are the implications of a stricter
5 NRC rule? And, Vanessa, this is a point that you
6 brought up yesterday, and I'm not sure that I captured
7 it exactly, as what happens if there's a stricter NRC
8 rule in terms of the state approaches? But when we get
9 to other considerations today, any issues like that,
10 and if I didn't characterize it correctly, I'm sorry,
11 but if you can just bring that up when we get to the
12 other considerations that Patty Bubar is going to tee
13 up for us. And that will also get to the concern that
14 we heard a lot about yesterday, which is, what happens
15 in the interim, before the NRC rule? What are the
16 Agreement States doing? And that's going to be a big
17 topic for the other considerations agenda item.

18 Someone thought it would be important to
19 clarify, and I believe it was Tom, clarify the nature
20 of Part 61. And, at some point today, we should have
21 some discussion on that. And, Tom, at some time
22 during the day when you think it's appropriate, or
23 when we get to other considerations, if you could just
24 put a finer point on that aspect of it.

25 So, those are some of our parking lot

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1 issues. And we also have the regulatory guidance
2 versus rule issue. As you remember, we said we were
3 going to entertain comments on what should be in the
4 rule, what should be in the guidance, as we went
5 through each section, but we also said that we would
6 come back and have a general session on that, after
7 people had time to reflect on the discussion
8 yesterday. And, perhaps, we should start with that,
9 finish it off, drive a stake through its heart this
10 morning before we get to the modeling thing.

11 For those of you in the audience, we will
12 be going out periodically for comments on the agenda
13 items that have been discussed. We do have a session
14 at the end of the day where we're going to go to the
15 audience for any comments that you might want to
16 express, any concerns, and if there are people here
17 who do have that type of comment, if during the break
18 this morning they could talk to me, and I could figure
19 out some timing issues with them, that would be
20 helpful. And I just want to remind everybody what the
21 NRC is doing here is trying to get comments that
22 they're going to use to address in the regulatory
23 basis for this rule. And, as Christopher Thomas noted
24 yesterday in the opening, our opening statement, so to
25 speak, he talked about that he hoped that this would

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1 be an open and objective process; therefore, a
2 credible process. And I think the NRC is dedicated to
3 doing that.

4 Just in terms of a quick summary on
5 significant quantities. I think that what I heard
6 around the table matched what happened in the Bethesda
7 Workshop, that there's not a need to define a
8 significant quantity. The requirement for a site-
9 specific performance assessment takes care of that.
10 But a very important note that came out in that
11 discussion yesterday is the trigger for doing such an
12 assessment is if DU is going to be disposed of.
13 That's the trigger for it.

14 In terms of period of performance, that
15 was a good discussion, because we heard a lot of
16 different approaches, and different factors that
17 should be looked at in the period of performance. And
18 we heard from Drew Thatcher about how the State of
19 Washington does it, and from Susan Jablonski, and
20 Scott Kirk on Texas. We heard from Marty on the
21 Department of Energy approach. And some of the
22 factors Peter Burns talked about, don't put it
23 somewhere that you know will be a problem, bring the
24 full weight of information to the process, is
25 something that David said. We heard from Christopher

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1 Thomas that the analysis should include things that
2 could destroy the site. And these are my words. I'm
3 just trying to give you a summary here. A 10,000-year
4 limit buys you a lot of, I guess, safety is just a
5 shorthand way of saying that. Steve gave us -- Steve
6 Nelson talked about geological disposal is the only
7 way to go. David Kocher, there's a possibility of
8 other options besides near-surface disposal.
9 Economics should be factored into that. And a concern
10 about the consistency of state -- between state
11 approaches. And I think that whatever the performance
12 period is, the impression I got is most people thought
13 that performance period should be in the rule itself,
14 rather than in guidance. And what was intriguing to me
15 is it seemed like there may be a way to combine a lot
16 of these different factors into an approach that's
17 acceptable to a lot of people.

18 Exposure scenarios, big concern was
19 enforceability of that requirement, and there should
20 be some general requirement on that. But a lot of
21 cautions about put the scenarios in the guidance,
22 rather than the rule. And source term, waste form
23 must match the site, and ALARA and the progeny, the
24 Radon daughters, have different geochemical
25 implications for the waste form. And that waste form

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1 can improve site suitability.

2 At any rate, that's just my take on what I
3 heard in yesterday's discussion. Any comments on
4 agenda for today? I guess my big question is, do you
5 want to do a reprise on the regulatory guidance versus
6 rule? Get that out of the way. Are there any
7 concerns, lingering concerns on that? Do we need to
8 have any more discussion on that? Is this microphone
9 working?

10 Okay. Tom?

11 MR. MAGETTE: No, I don't think we do. I
12 think what we need to do is just talk about each of
13 these items as it comes up. That's what we did
14 yesterday. I think that's what works the best. If
15 there is a roll-up topic, if there's something that
16 someone feels like is missed discussing them
17 individually, it should be addressed. To discuss them
18 in the aggregate, I don't, necessarily, object. That
19 was Christopher's point. There's not anything flawed
20 with the notion, but we do it at the end, if that were
21 the case. And we're not at the end yet.

22 MR. CAMERON: All right. Thank you, Tom.
23 Steve?

24 MR. NELSON: Not at the expense of
25 substantive discussion on some of the other topics on

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1 the agenda.

2 MR. CAMERON: Okay. Great. Well, if
3 there's a burning need, it'll surface. So, why don't
4 we start, and I think Christopher Grossman, Chris is
5 going to tee up the Modeling of Uranium Geochemistry
6 in a Site-Specific Analysis for us.

7 MR. GROSSMAN: Good morning. I want to
8 make sure this mic is working.

9 I'll start off by summarizing a little bit
10 about some of the discussion we had in Bethesda, and
11 then walk through some of the issues that arose out of
12 the NRC's analysis that we used to present options to
13 the Commission on how to proceed.

14 A couple of things, I think, came out
15 specifically from the Bethesda meeting, and my guess
16 is they'll come up again. One of them already has in
17 our discussion yesterday of the source term, and that
18 is the compatibility of the waste form with the site
19 geochemistry. That was one of the issues that was
20 brought up by the panels in Bethesda. And the second
21 one was a consideration of the effects of the
22 chemistry from the engineered barrier system, so
23 materials you may add to the disposal system as part
24 of the engineered barrier system, and how they may
25 affect the depleted uranium and its daughter products

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1 interaction with the environment. So, keep those in
2 mind as we go through, and we may discuss additional
3 ones today, based on the discussion among the
4 panelists.

5 Uranium and its daughters, and it has
6 several daughters, can move through the environment at
7 different rates, and they're dependent upon two
8 things, the geochemical conditions, and the
9 concentrations that are present. The geochemistry in
10 our technical analysis was treated as epistemic
11 uncertainty. And what we mean by "epistemic
12 uncertainty" is that there is a lack of knowledge on
13 certainty. So, we have used this approach, because we
14 were doing a so-called generic site, and we were
15 trying to incorporate a wide range of uncertainty that
16 may be exhibited across the country. But we realized
17 that that uncertainty may possibly be constrained at a
18 particular site, in a site-specific analysis.

19 So, what that meant, practically, is that
20 the geochemical conditions that we use in the modeling
21 were selected, and they were held constant over all
22 time. But between realizations, or different
23 calculations, they were varied across an uncertainty
24 distribution.

25 So, the results of that analysis suggest

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1 that the site geochemistry may be key for the safety
2 of near-surface disposal of depleted uranium. We
3 found four factors that we identified that look like
4 they would be important, and those four being the
5 moisture content of the disposal system, and the
6 environment around it, the pH of the carbonate
7 concentrations in the ground waters, as well as the
8 oxidation states. And I think Drew had mentioned --
9 had a question about that yesterday, so I think this
10 will be a good place to discuss that today.

11 So, just a little background on mobility
12 environment. Many may be familiar with this, but
13 maybe not all. The mobility of uranium and its
14 daughters, and virtually any environmental contaminant
15 in a waste disposal site is controlled by how much can
16 be released from the disposal facility, and its rate
17 of movement through the environment. So, if we look
18 at the waste release component from the source term,
19 there are several factors that control that,
20 solubility, how much of that can dissolve in the
21 waters that are present, the leeching from the waste
22 form. And, also, the oxidation state, whether it
23 would be a reducing condition, or oxidizing condition.

24 As far as transport, absorption, or how
25 well particles are retarded by the geologic media in

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1 the environment can play a role. And I think I heard
2 Dirk yesterday mention also colloidal transport, we
3 left that off the slide, but that is a potential
4 mechanism for movement through the environment, as
5 well. Colloidal particles, if you're not aware, are
6 small nano-scale-size particles that radionuclides may
7 absorb to, and they move largely with the flow of
8 water.

9 Solubility is a key issue, and that varies
10 strongly for uranium, in particular, with the pH and
11 oxidation state, as well as the carbonate
12 concentration in the ground waters. What you find is
13 a lot of times uranium will complex with carbonates,
14 and its solubility will increase, and more of it will
15 dissolve and migrate.

16 On this slide, we use this slide as a
17 demonstration of some of the uncertainty, or actually
18 variability that can occur in the geochemistry from
19 site-to-site. And we use travel times down here, but
20 don't focus on the numbers, themselves. Use them as a
21 sense for how much variability can exist at a site.
22 And the reason I say that is, these numbers are based
23 on the assumptions that go into this calculation.
24 They may be different for different sites, so this
25 wouldn't be the case for all sites. But the idea here

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1 is that between different soil types, and this is
2 dealing - I'm sorry, I didn't explain it - this is
3 dealing with the retardation coefficient, K_d , which is
4 how effectively a radionuclide may be retarded in a
5 particular geologic medium, so we have three different
6 soil types. And the data here we used for this
7 calculation is from the Sheppard & Thibault compendium
8 of K_d s from across the country. We have three soil
9 types, sand, loam, and clay. And you can see that
10 between the soil types, there's quite a bit of
11 variability, on the order of up to six orders of
12 magnitude.

13 And then, also, one thing to take note is
14 within a particular soil type, for instance, clay, you
15 may have four or so orders of magnitude. And, again,
16 don't hold me to those numbers, but it gives you an
17 idea that there can be a great deal of variability.
18 And that getting good site information is important to
19 constrain that variability.

20 So, some of the key considerations for
21 modeling the geochemistry, effect of the oxidation
22 reduction potential, the pH, and the carbonate
23 concentrations on the release of the uranium and its
24 daughters from the source term. Modeling of the
25 spatial and temporal differences in the geochemistry.

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1 Some sites may be more complex than others. They may
2 not be as uniform. You have sub-surface
3 heterogeneities that could lead to different mobility
4 rates. Those are things that we feel should be
5 considered.

6 Differences between the near field, and
7 the far field chemistry. Near field being close to
8 the waste form itself, where you may have more
9 concentrated environment, as opposed to a far field,
10 where things begin to dilute because of the dilution
11 processes that occur in the environment. So, the
12 chemistry there could be drastically different. As
13 well as site-specific differences in soil properties.

14 You may have a sandy soil out west, or more clay
15 soils in the east, for instance.

16 So, what we're asking today from the panel
17 is public feedback on considerations for developing
18 criteria in the regulations, or guidance on
19 geochemical parameters. What factors do we need to
20 consider? Are there others that we have not
21 identified that should be considered? And are there
22 alternative approaches that we may want to look at in
23 terms of dealing with modeling of the geochemistry?
24 And with that, I'll turn it back over to Chip.

25 MR. CAMERON: Great. Thank you very much,

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1 Chris. Who would like to start on the geochemistry?
2 Let's go to Steve, and then we'll go to Peter. Steve?

3 MR. NELSON: Yes. I think the site
4 geochemistry is very important to consider. And in
5 the effort to try to point out that site-specific
6 considerations are important, I have to turn to the
7 site I know best, which is located a little way from
8 here.

9 The clay material that is used to
10 construct the barriers, for instance, at Energy
11 Solutions, I don't know. I don't have any detailed
12 information on their properties. But given their
13 depositional setting, it would not surprise me if, for
14 example, if they were murels, if there was not a high
15 calcite content along with clay, or other minerals
16 that were of clay particle size. That could have
17 profound impacts by providing carbonate complexes to
18 uranium and its daughter products.

19 For example, and I note with a little bit
20 of irony that those materials were deposited when Lake
21 Bonneville inundated the site just 10 or 15,000 years
22 ago. When it comes to colloids, I think something
23 that needs to be remembered is not only do
24 radionuclides attach to colloids. When they do,
25 colloids very often, if not usually, travel

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1 significantly faster than the seepage velocity,
2 because of size exclusion in the pores. So, that is a
3 fast path out of a repository.

4 MR. CAMERON: Okay. Thank you, Steve.
5 Let me go to Chris right now. And are those the types
6 of considerations that would come into play?

7 MR. McKENNEY: Back to Steve. So, I want
8 to reorient a little bit on the question. We've been
9 talking a little bit on the -- bringing up the site-
10 specific nature, which most people think of as the
11 natural environment the site is at. And you brought
12 up the clays they're using for barriers, which may not
13 actually be native to the site. And, therefore, just
14 to re-emphasize the fact that you also have to
15 consider all of the engineered materials, and their
16 specific properties, and how they may be different
17 than the natural site, such as, the usual thing that
18 some people forget in the large part is the fact that
19 right around all buildings, and all construction
20 usually is different, is now a disturbed soil type,
21 not the natural soil type that was before. Is that
22 part of your -

23 MR. NELSON: Well, that is correct. In
24 the specific case I'm referring to, these clay or
25 clay-like materials that are being used for the

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1 engineered barrier happen to be on the site. And I
2 actually firmly believe that is a favorable condition
3 out at Energy Solutions. But if, and like I say, I
4 don't know, all I said it wouldn't surprise me if they
5 were murrells and had a high calcite content. If they
6 do, that is part of both the engineered, and the
7 natural system.

8 MR. CAMERON: Okay. Good clarification.
9 Let's go to Peter, and then we'll go to David. Peter?

10 MR. BURNS: I have three points I'd like
11 to make, and then I'd like to ask you a specific
12 question about the models.

13 The first point I want to make is that on
14 Slide Four in your show, you had a ground water flow
15 rate of one meter per year. And I don't know how
16 relevant that lower limit is to the situation we're
17 talking about, which is a disposal site that's located
18 above the groundwater table in the vadose zone where a
19 lot of the porosity is filled with air. To make my
20 point, I'll give an extreme example. You've probably
21 all been on the beach, and made sand castles when you
22 were a kid, or with your kids, or whatever, and you
23 dump a bucket of water on the top of the sand castle,
24 and it doesn't stick around very long. It goes down
25 very fast, much faster than, obviously, a meter per

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1 year. So, the low end of a meter per year is probably not unreasonable for a deep aquifer, but it is unreasonable for the vadose zone, and the immediate transport out of a disposal site.

5 Second point, and I made this in Bethesda, we have -- the oxidation and reduction certainly are important. The fact is, though, that these landfills are probably all going to be oxidizing, but, certainly, that's important. pH is definitely important. CO₂ concentration is definitely important. But if I understand it correctly, these landfills, at least currently, have all kinds of different waste forms in them, all kinds of different wastes. Maybe they're not necessarily in waste forms, but I'm worried about co-contaminants, in particular, organics, simple or complex organic molecules that will break down in the environment, give an abundance of oxalate and acetate, things that complex uranium and make it even more soluble than CO₂.

20 The third point is, I talked a little bit about the differences between near field and far field chemistry, and in there was kind of the implicit assumption that in the far field, the contaminant becomes progressively more dilute. I wanted to simply make the point that that's not always the case. If it

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1 were, there probably wouldn't be any uranium ore
2 deposits. I mean, there are natural conditions that
3 lead to concentration of uranium from low abundance,
4 or low concentration solutions. So, that should be
5 kept in mind, that you cannot simply assume dilution
6 as you move out in the system. There could be
7 conditions, like a roll front-type deposit could
8 establish, or something that would concentrate.

9 And the fourth point, which was a
10 question. When I look at Slide Four, as you pointed
11 out, for example, for clays, we have, basically, four
12 -- three or four orders of magnitude difference for
13 time travel of uranium in clay. Where does that
14 uncertainty come from? You're using some K_d s for the
15 minerals in clay, why isn't that just a dot? I mean,
16 I understand that there are uncertainties, to some
17 extent, in the K_d s, and there are different types of
18 soils, but how do we get four orders of magnitude
19 uncertainty on this prediction?

20 MR. CAMERON: Okay. Chris Grossman, Dave?

21 MR. ESH: Yes, I can talk to a couple of
22 those things. I think in your latter point first,
23 showing the variability in the transport rates, that's
24 directly coming from the variability in the measured
25 distribution coefficients for clay. So, I think as

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1 Steve Nelson indicated in his comment about specific
2 clay types, different clays can have different
3 absorptive properties. So, there's also uncertainty
4 that comes in the measurements that you do to
5 determine the distribution coefficients, so there's a
6 variety of sources of uncertainty, and/or real
7 variability that's reflected in, say, that compendium
8 of data, that then translates into those different
9 transport rates. That's pretty common that we see from
10 all sorts of data that is used in the performance
11 assessments. It's not unique to the distribution
12 coefficients.

13 In terms of the unsaturated transport, and
14 the beach analogy, yes, we agree with that. And
15 unsaturated flow phenomena, if you have a spill, or
16 place a large volume of water, the gradient is
17 essentially one, so it moves rapidly as the spill goes
18 through the surface, and the water is lost as it
19 transports into the pores. But, in general, over the
20 long term, an arid environment will have a recharge
21 rate, or infiltration rate that is less than the
22 precipitation rate, and the transport rates through
23 unsaturated media can be long in some circumstances.
24 If you saturate unsaturated media, you have gravity
25 driving the water. Of course, the gradient becomes

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1 one. But, over the long term, those unsaturated media
2 are generally not saturated, and you have variability
3 in the transport rate.

4 Chris' example here for the saturated zone
5 with the meter per year, that's just an example. Of
6 course, an individual site could have a transport rate
7 that's higher, much higher, or much lower than one
8 meter per year. It's just to illustrate the
9 variability in the geochemistry that you can get in
10 these sorts of calculations. And in the saturated
11 zone, you have both -- you can have a water flow
12 velocity, and a gradient, so it depends how steep your
13 aquifer is, basically, and that will determine your
14 transport rate.

15 MR. CAMERON: Okay. Thanks, Dave. Chris,
16 do you want to say something before we go over to
17 David?

18 (Off mic comment.)

19 MR. CAMERON: Oh, okay. Let's go to
20 David, and then we'll go over to Scott, and go down
21 the table. David.

22 MR. KOCHER: Yes, a few simple
23 observations, because I'm not a geochemist, so this is
24 not my area.

25 On your very first substantive slide, your

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1 first bullet made the point that the transport in the
2 environment depends on the concentrations that are
3 present. Alarm bells go off when I see that, because
4 that means that your K_d model is not the right one.
5 That's a linear model independent of concentrations.
6 And I don't know anybody in the performance assessment
7 business that's tried to do a non-linear model, even
8 though it may be necessary. So, just be aware that
9 that's a loaded statement. There's a lot of physics
10 and chemistry behind that.

11 The second point is that - and, Peter, you
12 hit me with a hammer if I'm wrong here, because this
13 is not my area - we're dealing with potentially large
14 volumes of depleted uranium in a small -- in a single
15 facility, so the uranium, itself, will buffer the
16 geochemical environment. I mean, there was a serious
17 proposal that's still on the table to use depleted
18 uranium as backfill at Yucca Mountain because of the
19 desirable way that it would buffer that system. So,
20 we're not dealing with -- so, his point about
21 interaction of the waste with the natural environment,
22 I would say is doubly important. I mean, it can't be
23 more important than he made it, but it really is
24 important.

25 And I guess the last point is, in thinking

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1 of this issue of regulations versus guidance, I can't
2 imagine anything that you could put in a regulation
3 about this that would make any sense. I mean, this is
4 a site-specific issue. The performance assessor has
5 to make his case, and you have to evaluate it.

6 MR. CAMERON: Great. Thank you. Thank
7 you very much, David. Do you want to respond? Go
8 ahead.

9 MR. MCKENNEY: Well, one example of
10 something that Steve and I were talking about
11 yesterday a little bit was, do we need to strengthen
12 the regulation on being more articulate on future
13 events and processes, and how you have to evaluate
14 that. Because, again, how important is colloidal
15 movement in either the near term scope and far field,
16 because you might have different processes. One is
17 that you have different wastes in there, and
18 everything else that you might have to take account
19 for. So, is there some sort of thing like that, that
20 we have like a general requirement that would
21 strengthen that to make sure that people have looked
22 at all these processes, so that whatever transport
23 model you use, or whatever the licensee and the
24 regulatory authority are looking at, that they have
25 addressed each of the possible processes, so that that

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1 has been -- it's transparent that that has been looked
2 at, has been considered. And the reason they went
3 down whatever path they did for modeling is because of
4 the following reasons.

5 In my mind, that is one way you could
6 bring it into the rule space. It would be pretty
7 general, it wouldn't be thou shalt include colloidal
8 movement at every site, or thou shalt do this, but
9 more of bringing it through, again, of what are review
10 points that they need to address in their assessment,
11 at least having said that they reviewed the process,
12 and said it is applicable to my site, or it's not
13 applicable to my site, and so forth.

14 MR. CAMERON: Thank you, Chris. Dave?

15 MR. ESH: One thing I would add to what
16 Chris has said. One way we have attempted to do this
17 in guidance is to provide, just for example, if we're
18 talking about the interaction of waste. We'll provide
19 a guidance element that talks about needing to
20 consider the interaction of different waste. Then if
21 we know of something, specifically, we'll also provide
22 guidance on that specific thing. So, if we know you
23 need to worry about chelating agents, we might provide
24 guidance with respect to chelating agents. But we can
25 provide a generic statement that just talks about

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1 interaction between waste, and the effects on
2 transport, and release, and that sort of thing. So,
3 I'd like to hear whether the people think that sort of
4 approach to guidance is reasonable, considering that
5 it can be a challenge to try to think of and list
6 every specific thing that would apply to every site.
7 So, we try to do it in kind of a tiered manner, if we
8 can. And I don't know if people want to comment on
9 whether they think that's reasonable, or not.

10 MR. CAMERON: Okay. And we have a couple
11 of people, Beatrice and Steve, who do want to comment
12 on that. Why don't we close that off, if you're
13 responding to that point. Why don't you go ahead,
14 Beatrice and Steve, and then we'll go to Scott, Dan,
15 and Drew, and see what they have to say, in addition,
16 on that. Beatrice?

17 MS. BRAILSFORD: I just wanted to clarify.
18 Christopher, I think, was speaking more about having
19 a -- I don't want to use the word "generic", but sort
20 of a guiding statement in the rule.

21 MR. CAMERON: Thank you. Steve?

22 MR. NELSON: Well, given the caveat that
23 we shouldn't be disposing of this in landfills, the
24 answer to your questions are yes.

25 MR. CAMERON: Great. Thank you. And,

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1 Scott?

2 MR. KIRK: My question has to do with
3 bringing in materials from outside the site to
4 enhancing the characteristics of the site's natural
5 geology. We sort of had some discussions with that
6 when we were licensing our facility, as well. And
7 what I was getting at is, we had a large clay north of
8 our site, and it did have an impact in the
9 infiltration rates during heavy rainfall periods. And
10 our thought was is that we could fill that ply off,
11 but after deliberations, we realized that that was
12 really deemed an active engineered barrier. And you
13 can take credit for that for only a certain period of
14 time, because when everybody is dead and gone, and
15 thousands of years into the future, you might not be
16 able to rely on those engineering barriers. Because
17 when you're working at regular nuclear facilities,
18 your safety basis is piping, instrumentation, pumps,
19 and things like that, but long into the future, your
20 safety basis is actually your site's natural
21 geological characteristics. And what I would say is
22 that the rule needs to -- and the guidance really
23 needs to make these kinds of distinctions between what
24 is an engineered barrier, what you can do, and the
25 time periods in which you can take credit for those.

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1 Does that make sense?

2 MR. CAMERON: I see NRC agreeing with
3 that. Thanks, Scott. Dan?

4 MR. SHRUM: Mr., is it Kocher? Dave? Can
5 I call you Dave? You can call me Mr. Shrum.

6 Yesterday, you made a really nice analogy
7 about football. And I know we're supposed to stay
8 away from sports analogies, but you stated that define
9 the goal line, and don't tell us what plays we're
10 supposed to run. What concerns me a little bit about
11 this specific topic is now we're being told what blade
12 of grass to run over at any given moment in time. We
13 need to be very careful not to dictate what site-
14 specific parameters need to be used. I understand
15 your thought, K_d varies. It varies with soil types, it
16 varies with water chemistry, it varies with everything
17 and anything imaginable.

18 What I would like to recommend is that
19 this could go into guidance, should go into guidance,
20 that, first of all, in the rule say a performance
21 assessment needs to be done, following the best
22 available performance tools that are out there at the
23 time, and it needs to be revisited.

24 Now, this may not be the time to talk
25 about that, but the performance assessment needs to be

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1 a dynamic item that can be updated as additional
2 information is determined. That would give the
3 regulator the opportunity to review, and, once again,
4 approve the performance assessment once it's
5 conceptually set up, would give the public an
6 opportunity to understand the new dynamics of the
7 system. So, again, this may not be the time to talk
8 about that, but that has been our intention. And I'm
9 not going to be drawn into the Clive site, because
10 we're going to just be different on that. However, I
11 think it's important to update the performance
12 assessment on a regular basis. And I would propose,
13 although, maybe it doesn't need to go in the rule,
14 that licenses are updated on a regular basis. Ours is
15 updated every five years. Might that not be the time
16 to update the performance assessment as part of
17 getting the new license. And you can, once again,
18 demonstrate compliance with Part 61.

19 MR. CAMERON: Thanks, Dan. Maybe it would
20 be useful to see if there's any reaction either from
21 NRC, or any of the other panelists to Dan's
22 observation. And, Drew, let's go to you.

23 MR. THATCHER: I guess if you want a
24 permanent full-time job, than yes. If you want to
25 update the PA every five years, that's great. I think

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1 some kind of a periodic updating of performance
2 assessments would be a good idea. Five years might be
3 too short, only because sometimes these can be pretty
4 involved processes that take several years, so you
5 just finish the one. Now you've got 18 months, and
6 you start it all over again, so maybe 10 years, or
7 something like that. So, I agree with the
8 periodicity, but I think five would be too short. Can
9 I keep going?

10 MR. CAMERON: Yes, please.

11 MR. THATCHER: Great. There's two points
12 I want to make, one on the interaction of waste with
13 other waste. Typically, if we're talking about a low-
14 level waste site, the behavior, in my mind, is very
15 similar to what happens at a Class D sanitary
16 landfill, initially. You're initially aerobic, things
17 break down, you have degradation, you've got the water
18 in there, et cetera, and then it goes anaerobic.
19 That's for it mixing with other waste. In the
20 instance of DU, I don't know if that's going to hold
21 true. I'm just thinking out loud here, because,
22 typically, we're talking about big volumes, and you
23 might have trenches that are dedicated to this only.
24 And if that's the case, then you may not have the
25 situation where, well, you're going to scavenge all

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1 your oxygen, and you really won't have any CO₂. In
2 that instance, you probably will have some, so I think
3 that probably is going to be a site-specific thing,
4 but I think that's something that has to be
5 considered.

6 In my mind, a lot of trenches, depending
7 on the distance between them, et cetera, kind of
8 behave as their own little entity. If you're talking
9 about complexing of organics, or what have you, I
10 think you're not going to get a lot of interaction
11 between trenches, just because there won't be --
12 there'll be some lateral transport, but it probably
13 is not going to be that significant. So, I guess,
14 you're probably going to have to leave that on a site-
15 specific basis, but I think the analysis for DU might
16 be entirely different than what happens for a regular
17 waste site. Just thinking out loud.

18 The second point, and, Steve, it's just
19 getting back to you. And I don't know the right
20 answer, because I haven't done a performance analysis
21 on the DU, but I think there are sites that could be
22 suitable for this. And, actually, thinking of Nevada
23 test site, I think it would be a perfect environment
24 for that. There's a gentleman that I was talking with
25 this morning, and they're in a net deposition area,

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1 really no groundwater transport. You can easily bury
2 it far enough that you mitigate the radon issues.
3 And, actually, they've been working with the Raytrack
4 folks, Kirk Nielsen, and Vern Rogers, and that group,
5 to really get a better handle on the modeling for the
6 radon diffusion coefficients. But I think there are
7 sites that can work for that. It's just saying that
8 out loud.

9 MR. CAMERON: Okay. Thanks, Drew. And,
10 Chris, did you have a response?

11 (Off mic comment.)

12 MR. CAMERON: Oh, okay. So, we'll see how
13 psychic he is. Marty?

14 MR. LETOURNEAU: Well, I was going to
15 respond to Dan's comment. You know, the Department of
16 Energy has right now eight operating disposal
17 facilities that we have performance assessments for.
18 And Dan is absolutely right, that the site-specific
19 details that have to be addressed in those performance
20 assessments are not something that would easily be
21 dictated in a rule, and sometimes not even in
22 guidance. It very much requires a technical staff
23 that can review the site-specific performance
24 assessment, and the site-specific aspects that are
25 important for any given site, and determine whether

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1 that performance assessment has the right details in
2 it, or not. And for Drew, we do periodic updates.
3 Most of our facilities are on at least their third
4 generation, if not fourth generation, performance
5 assessment.

6 (Off mic comment.)

7 MR. LETOURNEAU: Well, you know, the
8 interesting question, when we were getting ready to -

9 MR. CAMERON: Can we just take a time-out
10 so that Mike can get the -- the question was, Drew,
11 what's the time frame for the DOE? I'm sorry for the
12 interjection. I know we're not supposed to do that. I
13 was just thinking if he did the third generation, is
14 that over a 30-year period, or 20, or what have you?

15 MR. LETOURNEAU: We had originally
16 contemplated having a requirement in 435.1 that would
17 require having an automatic update every five years.
18 And we decided against that. And what we do is, we
19 look at the PA, and the facility on an annual basis.
20 We do an annual review of what that facility has
21 received, have they discovered any new information
22 that would change our understanding of the PA? And,
23 on an annual basis, we determine whether the PA is
24 still okay, or whether they need to contemplate doing
25 an update.

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1 That being said, it does happen about
2 every five years, on average. I mean, some of them
3 are six, some of them are eight, but we're talking
4 about a 20-year period over which these PAs have been
5 -- from the time they were originally prepared,
6 through all the updates that have been done.

7 MR. CAMERON: Okay. Thank you. And was
8 your -- go ahead.

9 MR. McKENNEY: Well, having talked to you
10 yesterday about the same topic, we were -- I knew your
11 response was going to come for Drew's comment, and
12 Dan's.

13 There are -- Part 61 currently does have a
14 set of times that you do need to revise your PA at
15 different steps of the project that are actually
16 listed in there. But, also, at any renewal state, and
17 the guidance in 1573 would -- that we currently have
18 out, does support the fact that these are living --
19 this is a living process, and it should be being
20 reviewed, and is it necessary to update it? And at
21 every license renewal point of view, the regulatory
22 agency is being asked, and, again, is there reasonable
23 assurance that the site still meets performance
24 objectives, and will meet performance objectives? And
25 then there's -- when they come in for a new waste

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1 stream, or something else like that, that, obviously,
2 would be another trigger for a revision, potentially,
3 that would have to be actually reviewed and licensed.

4 I mean, it's not specifically stated thou shalt do it
5 on this timely basis in the rule, but in the guidance
6 space, that would be -- and the need for a decision of
7 reasonable assurance by the regulator at any licensing
8 step. I think that those are implied, that at least
9 there be a review, and how good is the previous
10 performance assessment still?

11 MR. CAMERON: Okay. Thank you. Steve?

12 MR. NELSON: Yes. I want to thank Drew for
13 pointing a couple of things out. With that said, with
14 respect to the, for instance, disposal in Nevada test
15 site, if it's not one thing, it's another. There may
16 be net deposition now under the current climate, that
17 may not be true during the next glacial. But not very
18 far away from those facilities at the Nevada test
19 site, of course, is Yucca Mountain. The repository
20 footprint is something like six square kilometers, and
21 the DOE, at the urging of some of the NRC's
22 colleagues, I might add, one in particular who will
23 remain nameless, millions and millions of dollars have
24 been spent characterizing quaternary faults, and
25 quaternary volcanism. So, my point is, yes, maybe you

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1 might be able to find something somewhere, but at the
2 time scales over which this stuff becomes -- increases
3 and reaches its maximum activity, I have great doubts.

4 If it's not one thing, it's going to be another.

5 And I was going to hold this - I have one
6 more brief comment. I was going to hold this until
7 later, but I think it's pertinent now. There was some
8 discussion yesterday about cost. When it comes to
9 salt disposal, there's no need to reinvent the wheel.

10 There's a disposal site functioning now for
11 transuranic waste, so there's an awful lot known about
12 how to engineer such a site, how to study such a site,
13 what type of site characterizations, geochemical
14 experiments have to be done, so I would throw a
15 caution out to everyone, or at least an appeal, that
16 we not make the costs a bigger deal maybe than they
17 really are.

18 MR. CAMERON: Okay. Thank you, Steve.
19 Dan?

20 MR. SHRUM: Just a clarification to
21 respond to what Drew said, that I don't know what the
22 time frame is. And a review of a performance
23 assessment may be just to ensure that the assumptions
24 that went into it before, are still acceptable. And
25 I'm not talking about getting a brand new model

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1 started every time, and reinventing the wheel, so to
2 speak, as Dr. Nelson just said. I'm just talking -- I
3 know you said it at a completely different reference,
4 but I wasn't thinking of reinventing the wheel for
5 every time we do the performance assessment. It needs
6 to be a dynamic system that can be updated, if needed,
7 or reviewed during the license renewal period.

8 MR. CAMERON: Thank you. Thank you, Dan,
9 for that clarification. I think we're -- it seems
10 like we're finished with this particular topic. We
11 are due to take a break after this topic, but we're
12 actually 15 minutes ahead of time now. Do you want to
13 move through with the radon presentation and
14 discussion before we take a break, or do people --
15 okay. Let's do that, see where we are. And Chris
16 Grossman is going to tee that up for us, again.

17 MR. GROSSMAN: So, during this session
18 we'll be talking about the Modeling of Radon in the
19 Environment for a Site-Specific Analysis, and some of
20 the factors that need to be considered in that.

21 At the Bethesda meeting in Maryland a few
22 weeks ago, the discussion I think largely centered
23 around whether to use a flux-based standard or the all
24 pathways dose, and so I wanted to bring that to the
25 attention of the participants here today. I imagine

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1 we'll probably discuss that sort of thing again. We
2 also received quite a bit of information on
3 references, sources of information regarding the
4 modeling of radon. It's a complex subject, which I'll
5 hope to convey some of the complexities of it in this
6 presentation. But we look forward to receiving
7 additional information, if there's more to present on
8 that.

9 So, a little background. Radon is present
10 in the Uranium-238 decay chain, and it's shown on the
11 slide here, that's not all the daughters, but it's
12 some of the significant ones. As Dave pointed out
13 yesterday, it's also present naturally in the
14 environment, because of its association with uranium.

15 And it's responsible for a large fraction of the
16 natural background radiation across the country, which
17 does vary, as Dave pointed out. The half-life of
18 Radon-222 is around four days, which this is one of
19 the characteristics I think that presents some of the
20 complexity in the modeling, is the short-lived nature
21 of the material.

22 And unlike other radionuclides in the
23 uranium decay chain, radon is a noble gas. And this
24 causes it to behave differently in terms of its
25 environmental mobility than the other radionuclides in

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1 the decay chain. For instance, some of radon's
2 daughter products tend to be a little stickier, I'll
3 say, and will glom onto surfaces, especially in
4 buildings, and that can present a challenge in terms
5 of modeling, and mobility.

6 Unlike natural uranium, or depleted
7 uranium has been chemically separated from its
8 progeny, and consists primarily of uranium isotopes,
9 and the daughter radionuclides are largely not present
10 in the DU. Over time, though, those daughters will
11 then grow, and because of half-lives of many of those
12 radionuclides in the uranium decay chain are extremely
13 long, it takes a long time for radon to grow in. And
14 the chart at the bottom here is trying to describe
15 that. And you can see that over time, the radon is a
16 very small, if non-existent fraction of depleted
17 uranium, and grows into equilibrium with the Uranium-
18 238 in the DU, very long time frames into the future.

19 And as Steve has mentioned, with the activity of the
20 uranium over time.

21 So, conceptually, how do you model the
22 migration of radon? In this picture, you can see just
23 some simplifications. We have a source term of
24 depleted uranium. You may have a closure cover on
25 site, or a radon barrier, potentially. Radon can --

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1 will need to emanate from the material in the waste
2 form, so it has to find a way out of the solid phase
3 to the porous spaces of the media surrounding it, or
4 the waste form, itself, so that can migrate to the
5 surface. The gases will rise to the surface. They
6 could enter a household that may be above, or an
7 intruder, or they may enter the atmosphere, be
8 diluted, transported off-site to a potential receptor
9 downwind, as well as, you may have some partitioning
10 to the liquid phase, and migration downward, or as
11 other parents migrate downward in decayed radon, you
12 may have some of the radon coming out further
13 downstream from the waste form, itself. This gives a
14 crude sense of some of the considerations.

15 In determining the potential future
16 exposure to radon, we think it's important to consider
17 the uncertainty in exposure scenario. What are some
18 of the future land uses that the site may be involved
19 in? For example, a person living on the site is
20 likely to receive a higher dose than one that's living
21 off the site. In addition, there's some uncertainty
22 in the type of structures that may be built, depending
23 on the land use, et cetera. The size of the
24 structure, whether it has a basement, the type of
25 ventilation system, these are all things that could

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1 play into some of the uncertainties affecting doses
2 that someone may potentially receive from radon.

3 One thing I think to note at the bottom
4 here is, in this country, recently, that there's been
5 a move toward radon mitigation systems in building
6 codes, et cetera. It's uncertain whether future
7 generations may employ that strategy, or not, and how
8 widespread that practice may be.

9 So, as you can see, there are many
10 challenges associated with modeling the release and
11 transport of the radon. And this is due both to the
12 short half-life of the radon, and its movement through
13 the environment. It's highly dependent on how quickly
14 it can move to the surface, and whether it can reach
15 the surface before it decays. So, small differences
16 in the travel time can result in a large difference in
17 the amount of radon that reaches the surface.

18 In order for the radon to be mobile, it
19 must first get from the solid waste to the gas phase,
20 and so it's important to understand the amount of
21 emanation of radon from radium in the solid waste form
22 to the gas in the pore space, and the factors that
23 influence this.

24 Another considerable challenge in modeling
25 radon transport is modeling of diffusion through

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1 partially saturated porous media. This diffusion is
2 highly dependent on the moisture content of the soil,
3 which can vary both temporally and spatially across
4 the site, depending on the heterogeneity, and so
5 forth, at the site. Another challenge that we're
6 aware of is the uncertainty in the long-term
7 performance of clay radon barriers. We have a
8 research, Craig Benson out of the University of
9 Wisconsin who's done some work for us on the
10 effectiveness of some of these barriers at landfills,
11 and his research has been enlightening on their
12 performance over long time frames.

13 And, also, the last point here is
14 barometric pumping can also increase the flux of radon
15 from the subsurface to the surface. And this
16 phenomena basically happens when we have wind blowing
17 across the site, and it puts suction on the subsurface
18 drawing gases to the surface. This effect is most
19 pronounced in the case of a building being located on
20 the site, as it can greatly increase the amount of
21 radon that gets brought into the building.

22 So, again, we're looking for the panel's
23 input, as well as members of the general public, on
24 whether to specify criteria, or developing guidance on
25 the modeling related to radon in terms of a site-

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1 specific model. Are there methods for evaluating or
2 regulating the impact of radon gas exposures that we
3 should consider? Are there approaches for the
4 modeling to radon emanation, transport and exposure
5 pathways? Is there information on the selection for
6 parameter values that we should be aware of, in terms
7 of the modeling of radon, as it relates to disposal of
8 low-level waste? And what considerations do we need
9 to account for in terms of societal uncertainties in
10 the modeling of radon? And, so, with that, I'll turn
11 it back over to Chip.

12 MR. CAMERON: Okay. Thank you very much,
13 Chris. Comments? Let's go to Steve. Steve Webb, I'm
14 going to give you the -

15 MR. WEBB: One of the things, modeling of
16 radon, what you mentioned that what you have -- other
17 than gas phase infusion only, liquid phase ought to be
18 part of it, too. You also ought to add adduction,
19 which is due to water evaporation, which we talked
20 about in Maryland. But there are also screening
21 models which have been done by oil companies for radon
22 flow, or not radon flow, but what I think BOC flow in
23 the basements. You can take advantage of models which
24 are already out there. Also, barometric pumping, you
25 mentioned that's caused by the wind. Well, I think

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1 that's also caused by base change barometric pressure.

2 And other than clay radon barriers, that don't
3 usually last very long, cause plants, animals going
4 into them, burrowing like that, so it's kind of -- not
5 often that effective. Chip?

6 (Off mic comments.)

7 MR. CAMERON: Thank you, Steve.

8 MR. KOCHER: Yes, a couple of comments
9 here. The first one is a really minor picky point,
10 having to do with your graph of activity of radon
11 versus time, starting with one curie of DU. And I
12 think that curve goes to one, not to .75.

13 MR. GROSSMAN: Actually, I had a question
14 about that this morning, myself.

15 MR. KOCHER: I'm absolutely certain it
16 goes to one.

17 MR. GROSSMAN: I checked on that, and -

18 MR. KOCHER: There is a branch in the
19 decay chain, but it's farther down the road.

20 MR. GROSSMAN: This is on an activity
21 basis, so my understanding is that uranium -- this is
22 equilibrium with Uranium-238, which isn't the entire
23 activity of DU. So, you're in equilibrium with the
24 uranium. That's why it doesn't quite go to one on the
25 graph.

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1 MR. KOCHER: I'm surprised the effect is
2 that big, but that may be it. That may be it. Okay.
3 Thanks. Glad to be set straight on that.

4 You've opened the floor to the issue of
5 how radon should be regulated, so I'm going to bite
6 that apple for a second, if I might. Drew had a
7 proposal yesterday, which made a certain amount of
8 good sense; and that is, to adopt the approach from
9 the mill tailings business, and the standards for air
10 emissions in the EPA NESHAPs, and set a limit on
11 emanation rate of radon from soil. And it could be
12 augmented by what Department of Energy has done, is to
13 use an alternative of a concentration limit in air. I
14 think 10 years ago I would have said that's fine, and
15 now I'm not so sure. And I'll make sort of two
16 counter-arguments.

17 I'm not saying that one way is right, and
18 one way is wrong. What I'm asking NRC to do is to be
19 open to different possibilities to do this. And don't
20 be stuck on one way. And in other arenas, like
21 arguing about groundwater protection standards and
22 things like that with your friendly fellow agents, the
23 NRC argument has always been a dose is a dose. Well,
24 a dose is a dose here, too. Radon is no different
25 from anything else in terms of its impact on human

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1 health. So, I think that's an argument for putting in
2 the dose arena.

3 The question about whether a criterion in
4 mill tailing standards is appropriate here. I would
5 point out the following. Mill tailing standards were
6 developed to address a palpable problem in real time.

7 And it was necessary to write a regulation in such a
8 way that all the quantities were measurable in the
9 field. We are not in the business here of defining
10 standards that must be measurable in the field,
11 because nobody is going to be around in a million
12 years with a radon flux meter. So, I think you should
13 give serious consideration to including radon in dose
14 criteria that you use.

15 And that did lead to a question for --
16 well, one more comment, and a short question. About
17 the modeling, in general, I think everybody agrees
18 that modeling radon transport in soil is a very
19 difficult problem. And I heard Dave Esh mention that
20 one approach they're going to take is to try to gather
21 some data on natural systems, to generate data on
22 radon emanation rates as a function of radium
23 concentrations that are the source of the radon, which
24 is what I call a natural analog model. And,
25 personally, I think that's the only way to go.

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1 You can do all the fancy modeling you
2 want, but in the end, in order to validate or
3 calibrate those models, to turn the crank, you're
4 going to have to compare it with some real data, so
5 why not use the real data as your model to begin with?

6 I mean, this is just something for you to think
7 about, so I really want to support the idea of trying
8 to get some data on emanation rates, as a function of
9 radium concentrations in soil for different kinds of
10 environments.

11 This is, basically, what I did in the DOE
12 PA's that I worked on. I just used global average
13 concentrations in air relative to global average
14 radium concentrations in soil. But you can certainly
15 sharpen your pencil, and do that more on a site-
16 specific basis.

17 I think that's all for now. I may
18 remember, again, what else I had, but I just want to
19 emphasize, be open to the idea that a dose is a dose,
20 and that radon should be included in there.

21 Oh, I wanted to ask Dave, the calculations
22 you showed yesterday, your chart of percent of
23 realizations that met the performance objective. You
24 did calculate dose from radon in those calculations.
25 Right?

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1 MR. ESH: Yes.

2 MR. KOCHER: What kind of dose -- how did
3 you go from something to dose when you did that?

4 MR. ESH: As I indicated on the
5 uncertainty analysis area, we identified a number of
6 parameters that could affect the dose. We had to
7 represent a house with a basement, and an air exchange
8 rate, size of a basement, time spent in the basement
9 compared to upstairs.

10 MR. KOCHER: Yes. I'm asking a simpler
11 question. You had to go from calculated concentration
12 of radon to a dose. And that's, basically, what I'm
13 asking, how you did that.

14 MR. ESH: Oh, we used dose conversion
15 factors based on the concentrations -

16 MR. KOCHER: Yes. And the point is, where
17 did you get them, because the field is changing.

18 MR. ESH: Yes. We used FGR11, 12
19 publications to do the conversion of the atmospheric
20 concentrations of dose. We didn't use the most modern
21 information that's out there, but we didn't use the
22 old information that we used to use, either.

23 MR. KOCHER: Yes. I think I'll get back
24 with you on it offline.

25 MR. ESH: I understand your concern.

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1 MR. CAMERON: And just for information,
2 did you say FDR?

3 MR. ESH: Not the New Deal. FGR.

4 MR. CAMERON: Thank you. FGR. Okay.
5 David raised two issues. One, what's the regulatory
6 framework? But, also, the idea of - I'm not sure I
7 can use the word "validating" the model, but
8 supporting the model with real data from natural
9 analogs. And I know that we heard something about
10 that from Drew yesterday. So, in addition to the
11 comments that you, Christopher, and Drew have, let's
12 get some feedback on what David said, and, also, on
13 what Steve said, possibly. Go ahead, David.

14 MR. ESH: One thing that we talked about
15 in the last workshop, and I'll re-emphasize here is,
16 we are interested in data sources that people might
17 know, or have that are available, that we could use in
18 development of this guidance, and these sorts of
19 approaches. So, if you have data in this area, we
20 would certainly want to see it.

21 MR. CAMERON: Okay. Let's go to
22 Christopher.

23 MR. THOMAS: Thank you, and good morning.
24 This follows on a little bit to what David said, so
25 I've got a question, and then a comment. And the

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1 question is that in the paper, David, that the NRC put
2 out on depleted uranium, were doses to organs
3 calculated?

4 MR. ESH: No, in that paper we did TEDE.

5 MR. THOMAS: And I guess my question is,
6 doesn't the current law and the public protection
7 standard require a certain limit on doses to organs?

8 MR. ESH: Yes, it does. In the analysis
9 that we did, we were following the recent direction
10 that we've had from the Commission on these types of
11 analyses. We've done them in our incidental waste
12 reviews under the NDAA 3116.

13 MR. THOMAS: Can you just say that again
14 one more time slowly?

15 MR. ESH: NDAA 3116. That's where we do
16 independent reviews for DOE's waste determinations,
17 which involve closure of high-level waste tanks, and
18 disposal of secondary waste generated from those sorts
19 of activities. The Commission has given us direction
20 to use TEDE in lieu of those organ doses, so that's
21 why we did it.

22 MR. THOMAS: I'm just wondering if that
23 means -- I guess I see one of two different outcomes
24 of that. In one, it's almost like the other part --
25 it's almost like the public protection standard is

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1 being revised, because if the law is saying the
2 protection is based upon doses to organs, but the
3 analyses are not calculating doses to organs, then I'm
4 just wondering if that presents a problem. And then I
5 want to follow-up with a comment.

6 MR. MCKENNEY: Okay. TEDE, which is Total
7 Effective Dose Equivalent, which is a method of
8 calculating the dose, actually, primarily calculates
9 the dose to organs, and then does -- adds those all up
10 to see what the effective dose to the whole body is to
11 the dose to all the organs. It is a system different
12 than was established in 61. Back when 61 was
13 produced, it was based on dose methodology that was
14 only known, which was developed in 1960. They had no
15 understanding of what the -- they had limited
16 understanding of the different radio sensitivities of
17 different organs were, and how would a millirem of
18 dose to one organ compare to a millirem of dose to
19 another organ, as compared to the overall
20 effectiveness of dose to the whole body.

21 In the '60s, they produced a system that
22 they could -- they had data, a medical system to
23 figure out how those related together. That then
24 formed the system that we went to in new Part 20, in
25 Part 20 when we changed Part 20 in '91, that adds up

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1 all the organ doses together, so you can compare. If
2 I get a millirem of dose from an external source, how
3 does that compare to a millirem of dose to a lung?
4 And, in general -- and that's we go, and we don't
5 calculate organ doses specifically. We hadn't had the
6 limit back in Part 61, originally, because we couldn't
7 compare the organs. We had to have individual organ
8 limits. And at low doses, the only -- you can use
9 just a TEDE standard that is equivalent. And the
10 Commission has had this policy since the mid '90s, and
11 has had -- and, actually, has put it into rulemaking
12 in two different cases, has asked for public comment
13 on that policy. So, we're still following that policy
14 of using TEDE. It does not -- we don't ignore the
15 organs. They are a fundamental part of making the
16 calculation.

17 MR. CAMERON: And that's a very useful
18 clarification, because as Christopher's comment has
19 indicated, there is concern about this particular
20 issue in terms of are we ignoring the organ dose at
21 this point? And, Christopher, do you have a follow-up
22 comment on this?

23 MR. THOMAS: I appreciate that
24 clarification. And, I guess, I would just leave it
25 with echoing what David said earlier, which is that

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1 this -- I agree that radon should be factored into the
2 dose, and not treated in some other way. I mean, to
3 me, the idea that yes, it is naturally occurring is
4 kind of irrelevant. I mean, for Utahans, like maybe
5 we're exposed to more radon naturally, and maybe
6 that's a reason that we wouldn't want more of it, not
7 as a reason to say yes, you should allow more. So,
8 thanks.

9 MR. CAMERON: Okay. And we're going to go
10 to Drew, but I guess one question for people to think
11 about, and consider. Is this -- the statement that
12 radon should be considered in a dose that we heard
13 from David and Christopher, is that controversial? Do
14 people -- I just want to know if people -- if anybody
15 disagrees with that.

16 MR. LETOURNEAU: Yes.

17 MR. CAMERON: Okay. That answers the
18 question. We're done with that.

19 MR. MAGETTE: Yes. I could say no, but, I
20 mean, we -- I said yesterday that we think the radon
21 flux is okay, but I also think what Christopher just
22 said is okay. I mean, I think you can do it a variety
23 of ways. But I'll certainly defer to Marty to speak
24 for why he objects to it. But that's -- it's not that
25 big a deal.

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1 MR. CAMERON: Okay. Thank you, Tom. And
2 excuse us just one second, and we'll hear from the no.

3 MR. LETOURNEAU: I guess I'm not
4 necessarily objecting to it, Tom, as much as I'm
5 concerned I want NRC to be able to articulate, is
6 this, in fact, a policy change? I mean, have we --
7 did we consider radon as part of the doses, the Total
8 Effective Dose Equivalent, or the doses that were
9 calculated in the EIS? Have we traditionally
10 considered them as part of the all pathway doses, or
11 is this, in fact, something new? I recognize what
12 David Kocher is saying, that a dose is a dose, but one
13 of the things that we're dealing with here when we
14 talk about DU is - and the point keeps coming up - how
15 different it is from low-level waste that we have
16 traditionally analyzed, and that we've traditionally
17 regulated? And, in fact, it is the radon that is what
18 makes it so different. And we've talked about the
19 fact that radon is the largest portion of what you
20 receive in normal background radiation. There are a
21 lot of issues here that I'm just wondering are we
22 subtly making a policy change, are we subtly treading
23 into a new area that really hasn't been addressed
24 before? I know there's not an international consensus
25 on how we do this. And, obviously, DOE has picked a

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1 certain way of doing it, to do it separately, but one
2 of the other aspects to think about is, the whole idea
3 of doing the performance assessment is to help you
4 understand how your facility is going to operate. And
5 if you're going to have a mechanism, or an event that
6 is going to swamp your understanding of that, is that
7 really helpful, if it's rolled in with everything
8 else? So, I'm just looking for consideration of
9 those, and I'll look for feedback.

10 MR. CAMERON: Okay. And before we hear
11 feedback on that from the NRC and others, I want to go
12 to Drew. I think he has several points, and he may
13 also have something on this issue. Drew?

14 MR. THATCHER: Thanks. First, let's go
15 broad. I think all of the stuff for radon should go
16 in guidance, as far as site-specific stuff. You gave
17 the examples of home. In the case of Eastern
18 Washington, 90 percent of all homes are built on
19 slabs. They don't have a basement, so those kinds of
20 things really need to be done on a site-specific
21 basis. And then getting back to Dave's point, or even
22 Christopher's, I do agree. I think radon -- I mean,
23 it's like anything else. It's a contribution from the
24 waste, then it has to be considered in terms of the
25 total dose. And by me throwing up there the fact that

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1 perhaps you could use a metric, or some other means,
2 meaning a flux limit, there is a dose associated with
3 that, and it be calculated, so it's not like you're
4 not doing that. And, maybe, if I can just walk
5 through, Dave and I were talking before we started
6 this morning, and he and I are differing. I mean, I'm
7 not saying that's the only way you can do that, but as
8 I work through just a logic model on okay, we want to
9 figure out the impact from radon in a million years.
10 And once we get beyond a certain point, we all know
11 there are glaciation events, there could be major
12 floodings, et cetera, that you need to take into
13 consideration.

14 Generally, for the analysis that I've
15 done, all of the groundwater impacts, et cetera, have
16 already been done by that point, so whether there's
17 another flood or not, really matters not, at least the
18 way I see it. But what you also have when you do that
19 is, okay, population starts at zero all over again.
20 Right? I mean, when we're talking these floods, it's
21 not like oh, the Columbia River just flooded. That's
22 a big deal. No, this is like population is gone, and
23 now civilization, at least in that area, has to start
24 all over again. So, how does that get factored into
25 this? So, what I'm saying, that's how I think you

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1 could really get yourself tripped up on this, as far
2 as the long-term things.

3 One other point. I do see the -- for clay
4 barriers, I mean, it's true. If you've got 12 inches,
5 or whatever it is of the clay barrier, you've got
6 multiple dry seasons. Now, it's desiccated, and your
7 clay is not working, at least for a radon barrier.
8 And one of the ways we've got around that is simply to
9 take that same fraction of clay, mix it into a bigger
10 volume, more like an ET cap, or evapo-transpiration
11 cover, more of an effective way to do that. Tends to
12 be self-healing, even if you get clastic dykes, even
13 if those dykes are filled with sands, as opposed to a
14 clay, or silt loam, you still have in aggregate a
15 fully functioning cover that tends to work. So, any
16 other points? I'm good. Thank you.

17 MR. CAMERON: Okay. Thank you, Drew. And
18 before we go to Chris, or any of the other NRC staff
19 on this, let's go Beatrice, Steve, Christopher, and
20 over to Scott. And then let's see what the NRC has to
21 say about any of those points. And, including Marty's
22 issue of how big a policy change is going on here.
23 Beatrice?

24 MS. BRAILSFORD: Well, I guess that's why
25 I put my little tent card up, was Marty's concern

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1 about a policy change, which I think, once again,
2 emphasizes that the decision to put DU in Class A, and
3 the decision to allow shallow-land burial came draped
4 in all sorts of problems that I'm not sure that we can
5 finesse our way out of. So, that's just sort of back
6 to where I started out yesterday morning, that we're
7 trying to nip and tuck something that really at the
8 end of the day is not going to fit.

9 MR. CAMERON: Okay. Thank you. Thank
10 you, Beatrice. Steve?

11 MR. NELSON: Yes. I realize we're working
12 here on radon, and how to deal with it. And I
13 appreciate that. And Peter's touched on this a little
14 bit yesterday. There are 12 other nuclides, and at a
15 lot of sites the exposures will be through
16 groundwater. And I think we need to not forget, let
17 the other dozen or so nuclides become orphans while we
18 think only about radon.

19 As far as a flooding event, if anybody is
20 interested, I have a little map that shows where the
21 shoreline would be if it reached the elevation of
22 Clive. And we're not talking about an instantaneous
23 wipeout and resetting of humanity. We're talking
24 about people that -- you're certainly talking about
25 downtown under water, and much the northwest areas of

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1 Salt Lake under water, but we'd be nice, and high and
2 dry up here, most of the Salt Lake Valley, in fact.
3 So, here we have a scenario where, effectively, a
4 repository could go away in terms of being flooded,
5 eroded by waves crashing on it across a lake with a
6 large fetch, but that need not be an instantaneous
7 catastrophic event for society in terms of immediate
8 flood risks. As a matter of fact, in this instance,
9 it's more likely to be a gradual thing. And people
10 will be accommodating their lives to it.

11 MR. CAMERON: Okay. Thank you, Steve.
12 And Christopher?

13 MR. THOMAS: I wanted to go back and
14 clarify something, and I need to work out exactly what
15 the best way to do it would be. But, I think any dose
16 calculations do need to factor in radon. Now, the
17 part that makes me uneasy about saying that's the only
18 way to like limit radon, is what if in the site-
19 specific analysis they don't include any on-site
20 scenarios? Okay. Well, then I would say well, if
21 that's the case, then there should be something like a
22 flux limit, because, to me, at that point, then, that
23 would be the only way to really protect somebody who
24 might inadvertently intrude on the site. So, I think
25 there has to be some sort of -- I just think that the

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1 protection of an inadvertent intruder has go to be
2 dealt with somehow, so I would just hesitate to just
3 say yes, this is the right way to go, because it might
4 not be, if the licensee, or whomever says okay, we
5 don't -- we're not going to look at somebody going on
6 the site. Okay. Thanks.

7 MR. CAMERON: Okay. Thank you,
8 Christopher and Scott. And we've heard that concern
9 before about protection of the intruder has to be key
10 -- is a key factor here. And maybe we'll have some
11 discussion on that. Let's go to Scott. And, David,
12 did you have something additional? Well, let's go to
13 Scott and David, and then let's hear NRC reaction to
14 all this.

15 MR. KIRK: Yes. I think that's a good
16 order, because I was going to really comment about
17 what David did say. And it wasn't that long ago when
18 the License Termination Rule was promulgated, and
19 there was vigorous debate as to whether or not you
20 should have a separate drinking water standard, or all
21 pathways should be summed. And the NRC did opt that
22 all pathways summed was the best approach to move
23 forward. And I hadn't really thought about it before
24 until David said it, but the radon flux limit is for
25 real time monitoring. And it really doesn't have

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1 anything to play in for thousands of years into the
2 future. And I would just say, as a matter of policy,
3 NRC should really think carefully about which approach
4 it's going to take, so it can articulate in their
5 regulation, and to their guidance to explain the
6 rationale. And I say it, because my own thought would
7 be, it would be a shame to have a License Termination
8 Rule that is founded completely separate with a
9 different philosophy under this rulemaking.

10 MR. CAMERON: Good point. David?

11 MR. KOCHER: Yes. Discussions take a life
12 of their own, so let me go back to the beginning here
13 for just a second. Contrary to what you may have
14 heard, I did not say that one way is better than the
15 other. Okay? Is everybody clear about that? I'm
16 just saying that this is something for the NRC to say.
17 Marty makes an excellent point about policy
18 implications. There are lots of areas where we
19 regulate radon, just like anything else already. But
20 your point is absolutely valid.

21 Something else I would point out that's
22 not been said yet, is that the -- in most scenarios
23 that I can conceive of, the timing of exposure to
24 radon, when they occur, will be very different from
25 when exposures to the other radionuclides in the decay

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1 chain occur. So, we're not likely going to be dealing
2 with a problem of having to add doses from radon to
3 something else. The radon exposures, once that stuff
4 migrates downward, no radon is getting out anymore, so
5 there are timing issues here. But my central issue
6 here is that there's another way to do this besides
7 the mill tailing standards. Remember what the mill
8 tailings standards were designed to do, and that's not
9 our problem here.

10 MR. CAMERON: Okay. Chris, I don't know
11 what you want to say, but you've heard a lot of
12 commentary, and we'll turn it over to you.

13 MR. MCKENNEY: I just wanted to go through
14 a little bit following Marty's point about what is the
15 placement of radon in dose assessments currently in
16 the policies across the NRC.

17 We'll start out with Part 61. There was
18 no specific exclusion of radon in the original
19 statement. It was not considered in the dose
20 assessment in the EIS, but that was based on the fact
21 that there are small amounts of source material in the
22 EIS, so, therefore, they discounted those. But there
23 was no specific exemption that said if you do have
24 more source material, you don't have to calculate it.

25 In a later document that updated the

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1 assessment methodology used in the EIS, there was a
2 statement that did say that the authors of that, which
3 had been involved in the original EIS, believed that
4 if source material was present in greater quantities,
5 you would have to calculate the doses for radon.

6 In Part 20, in general, most licensees do
7 not have to calculate doses from radon. However, if
8 you do have source material in significant quantities,
9 you need to include it, and radon is not considered
10 part of background radiation. However, in License
11 Termination Rule, in 1997 in the Statements of
12 Consideration, there was a Commission decision that
13 said that since the dose limit for the License
14 Termination Rule was very low, that -- or was at 25
15 millirem, and, therefore, you wouldn't have much
16 radium to be allowed to remain behind because of that
17 dose limit in near-surface soil, because external
18 gamma, or somebody living on that site, that the
19 levels of uncertainty in trying to translate the radon
20 into a house calculation, and other things, it was not
21 necessary to calculate the radon for unrestricted use
22 of land. But that was specifically stated in the
23 Statements of Consideration, that there was a
24 exclusion. And I'm saying that there isn't any of
25 that language in Part 61 at this time. And,

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1 therefore, any decision to exclude, would seem to me,
2 that we would have to explicitly put that as part of
3 the rulemaking, and have the Commission make the
4 policy decision to do that.

5 MR. CAMERON: Okay. That's very useful.
6 And it's good that this issue has been raised, because
7 it won't get lost. Go ahead, Drew.

8 MR. THATCHER: I just wanted to respond
9 back to Beatrice. I think she made a great point
10 about this depleted uranium, and it's currently Class
11 A. I think the reality is, when you do a performance
12 assessment for this stuff, there is -- you're going to
13 have to put enough material above it to make sure your
14 radon is effectively attenuated. That means it's
15 really not at the top of the landfill, or top of a
16 trench. You're really probably putting it at the
17 bottom. I mean, she's made a great point, but I think
18 in the performance assessment how it falls out,
19 there's no way it's going to be treated like regular
20 Class A waste.

21 MR. CAMERON: Okay. And, I guess, that's
22 the point, isn't it, behind this whole rulemaking
23 effort? Let's see if anybody in the audience has a
24 comment on either the geochemistry or the radon
25 modeling, and then we'll take a break. Does anybody

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1 have anything to add to the discussion on those two
2 points that we heard this morning? Okay. This is the
3 ubiquitous Dirk from Oregon. Okay.

4 MR. DUNNING: I'm going to back to the
5 geochemistry. It just happens you have with you Peter
6 Burns, who is one of the experts on colloid chemistry
7 for uranium. And I'd encourage you to lean heavily on
8 what he has to tell you about some of the work that he
9 and his colleagues have been doing.

10 Uranium chemistry understanding has
11 changed rather dramatically in the last 15 years. Not
12 only is there the soluble fractions, which you talked
13 a bit about this morning with the carbonates and the
14 colloids, but there's at least three different major
15 fractions of colloids. And the simple equations that
16 are most often used principally focus on those things
17 that could, in some way, be represented by the K_d -kind
18 of equations. But there's two points there. One is
19 that the K_d s that are actually observed in the field
20 quite often are dramatically lower than the things
21 that were in the reference that you had. EPA's
22 compendium on K_d s is probably a better source to use.
23 It's a little bit more recent. A lot of the work that
24 the Department of Energy, and the National Labs have
25 done is probably even more recent than that. But

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1 there is even more recent information that is probably
2 things that should be leaned on.

3 A lot of the older K_d s, unfortunately,
4 suffer from a defect in that they don't assure that
5 there was not insoluble material present when the K_d is
6 analyzed, so they end up biasing the K_d s very high
7 artificially, which is something to watch for.

8 The other problem is that the fundamental
9 idea of K_d s comes out of a simplification that was done
10 decades ago, in trying to model how things moved
11 through soil. And people forget that there are eight
12 fundamental assumptions that go into whether or not
13 it's valid to use a K_d . And, virtually, all eight of
14 those are violated in most uses where the K_d equations
15 are applied. That doesn't mean that the results are
16 necessarily invalid, but they're brought deeply into
17 question. So, I'd urge caution on all of that. And
18 then when you do the modeling, assure that you look at
19 each of the different major mobility factors, and how
20 those work. And that the equations are capturing each
21 of those.

22 MR. CAMERON: Thank you again, Dirk.
23 Okay. Let's take about 20 minutes. Christopher?

24 MR. THOMAS: I just wanted to say
25 something really quickly, Drew, to what you had said.

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1 I don't think it's quite as simple as that. I mean,
2 your point about burying it lower. I mean, I've heard
3 that before, and that can mitigate certain hazards,
4 but we're talking about something over very long time
5 frames, and I don't see how you can guarantee that
6 that barrier stays in tact over those kinds of time
7 frames. So, that might be fine for the institutional
8 control period of 100 years, but realizing what we're
9 talking about isn't -- it isn't hazardous in that
10 short of a time frame. And, like I said yesterday,
11 going back to what the NRC, itself, has said about
12 Class A material, it was conceived of as something
13 whose hazard would have largely gone away after 100
14 years. And that is not the case here with this
15 material. So, I just -- I don't think this is Class
16 A, as it was originally conceived. It's now become a
17 sort of catch-all thing, and I think we'll get into
18 this a little bit more later with the unique waste
19 streams talk.

20 MR. THATCHER: And, just to add, I think
21 it really depends on the site. You've got to make sure
22 your site scenario is net deposition instead of net
23 erosion, so, I mean, if the site is not appropriate,
24 then it's not appropriate.

25 MR. CAMERON: Okay.

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1 MR. NELSON: For one million years, or
2 more, it has to be a site of net deposition.

3 MR. CAMERON: Okay.

4 MR. NELSON: Good luck.

5 MR. CAMERON: We're going to take about 20
6 minutes now, and come back. So, we'll see you about
7 25 to 11.

8 (Whereupon, the above-entitled matter went
9 off the record at 10:19 a.m., and resumed at 10:46
10 a.m.)

11 MR. CAMERON: Okay. Everybody is going to
12 be drifting in here, and we'll just wait to see if we
13 get some representation on this side of the table, and
14 then we'll get started. We're going to take a little
15 hiatus from the agenda right now, because of one of
16 our participants is going to be leaving, Peter Burns,
17 around lunch time. And I mentioned that we had this
18 issue of a statement of the groundwater pathway is
19 redundant from David yesterday, and I think there's
20 probably been some misunderstanding about exactly what
21 he meant by that. But right after he said that, Peter
22 Burns had said something that seemed contrary to that.
23 I don't think there's that big a divide, but before
24 Peter has to leave, I wanted to make sure that we
25 ventilated this issue, so that we could clear up any

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1 misunderstandings, and just be clear on what both of
2 them were saying. And, David, I guess I would just go
3 to you to sort of clarify, or just state what you were
4 trying to say with that statement yesterday.

5 MR. KOCHER: Yes, thank you. The basic
6 point I was trying to make is this. There are two
7 separate and distinct performance objectives in the
8 rule, one related to protection of off-site members of
9 the public, and the second related to protection of
10 inadvertent intruders. And the point I was trying to
11 make is that those two performance objectives are
12 intended to address two entirely separate and distinct
13 problems. The performance objective for protection of
14 the public at most sites would address the issue of
15 how much can you release into water, and be
16 transported beyond the site boundary? So, that's the
17 performance objectives that covers the water pathway.

18 The function of the intruder performance
19 objective is to determine how much can you leave
20 behind in the disposal facility that hasn't moved?
21 So, what I was objecting to and saying is not a
22 particularly good idea is when you do an inadvertent
23 intrusion analysis to include a water pathway for that
24 individual, and that's what -- because that's what's
25 redundant with the off-site member of the public.

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1 Their wells are co-located really. And especially for
2 DU, they're essentially co-located, so the two
3 performance objectives are intended to address two
4 entirely separate problems. They're both important.
5 Some people, I think, got the impression that I was
6 pooh-poohing the importance of releases to water, and
7 all of that. That's, I'm sorry to say, not true.
8 That's certainly not my belief, but I just want to
9 point out that many people believe that it's
10 inappropriate to include a water pathway.

11 Now, you should include a drilling
12 scenario, but the exposure is to the solid waste
13 that's extruded and brought to the surface, not the
14 exposure to the water that the person might use later.

15 Bear in mind, also, that the exposure to the solid
16 waste, and the exposure to the water occur at
17 different times.

18 MR. CAMERON: Okay. So, are you saying
19 that when the performance assessment considers the
20 public objective, that it is also inherently going to
21 consider the intruder -

22 MR. KOCHER: There is an inherent limit on
23 a water pathway dose to an intruder, but that's not
24 what it's intended to do.

25 MR. CAMERON: Okay. Let's go to Peter.

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1 MR. BURNS: Thanks for the clarification,
2 because I think we're indeed on the same page. When
3 it comes to an intruder's risk when they drill a hole,
4 a well through a waste site with vast quantities of
5 uranium, supposing they actually continue to drill and
6 so on, I'm not too concerned about the water pathway.

7 For that intruder, either they'll have figured out
8 not to drink the water after they have all this vast
9 quantity of uranium coming up. Or, even if they
10 don't, it'll still be modest in terms of a dose,
11 probably, in comparison to what they'd get from all
12 the material they bring up. So, I'm fine with that.

13 I think the only confusion was with
14 regards to which water pathway should be ignored. And
15 for the intruder, that water pathway, I'm fine with
16 that, if that's clear.

17 MS. BRAILSFORD: What was your last -

18 MR. BURNS: I don't recall what I said
19 last, or first.

20 But, let me say that I'm not concerned,
21 specifically, about the water exposure pathway for an
22 intruder. I think there are other factors that are
23 considerably more significant than the water pathway.

24 I'm relieved to hear that we don't have disagreement
25 on the importance of a water pathway for exposure of

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1 the non-intruder, in other words, the people
2 downstream that are using groundwater that may well
3 become contaminated because of a waste site somewhere
4 upstream that they may not even be aware exists. And
5 they certainly haven't built a house on it, or
6 whatever.

7 MR. CAMERON: Okay. And is that clear to
8 the NRC staff? Okay. Great. And, Christopher, did
9 you have anything you wanted to say on this?

10 MR. THOMAS: Now that you mention it, I'm
11 just thinking -- I'm just trying to think through
12 this, because, you know -- and, David, what you said,
13 you said something about these exposures would occur
14 at different times. And I'm just -- what I took from
15 your comments in aggregate was that for an on-site
16 intruder, you're going to have one exposure situation
17 that's going to swamp everything else. Direct contact
18 with the waste is going to swamp contact with water.
19 But my secondary thought was, is that true over the
20 entire time of the site and the waste as the waste
21 evolves? It's just a question.

22 MR. CAMERON: Okay. I don't know if
23 anybody wants to -- oh, go ahead, Drew.

24 MR. THATCHER: When we did our PA, one of
25 the ways we handled that was simply break it out into

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1 distinct time frames. There were -- with
2 uncertainties, there's pretty clear time frames as to
3 when things happen, so if you were to drill a well in
4 the first thousand years before you had significant
5 groundwater contamination, that's one impact. And
6 then from one to ten, or something like that, you had
7 another. And the two did not add up together, so
8 that's how I handled it, anyway.

9 MR. CAMERON: Thank you, Drew. Chris?

10 MR. MCKENNEY: Our general guidance right
11 now would be that when you're looking at what sort of
12 pathways you need to include in the various ones,
13 would be that you'd need to -- you could exclude
14 pathways, if they weren't a significant fraction of
15 that, or were not likely to tie them together.

16 For the example of bringing waste up, it's
17 sitting up there, and then groundwater later being a -
18 - so the timing actually comes through. You'd also
19 have to worry about modeling all of the removal
20 processes for that surface contamination so it
21 wouldn't stay at the highest concentrations right
22 around the residence over time. So you'd have that
23 competing loss rate to also deal with, versus the
24 fresh high concentration stuff that may be more mobile
25 in the environment, more exposure to the person.

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1 So, the general thing for any type of
2 analyses is that if you want to not include certain
3 pathways, you do need to justify that they are a
4 general small fraction. We do understand that
5 sometimes you'd have a different purpose for other
6 things, and we'll take that into consideration, too.
7 But if we're talking about any type of pathway
8 analyses, a lot of times if it's credible in the
9 general pathway that -- at a general site, we would
10 include this, this, and this, and this, and you don't
11 want to include one of them, you need to justify why
12 you're not including that, and to take those into
13 account.

14 MR. CAMERON: Okay. Thank you. Let's
15 move on to the definition of unique waste. And Dave
16 Esh is going to tee this one up for us.

17 MR. ESH: Thank you, Chip. This is my
18 last presentation on depleted uranium for at least a
19 week.

20 A little bit of background. The 10 CFR 61
21 Environmental Analyses considered 1980's waste
22 streams. There's a picture out of one of our NUREGs
23 here on the types of things they considered. They
24 made groups of different waste streams, and then
25 components within those groups. And then did a sum,

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1 and an aggregate of all those waste streams and groups
2 to come up with an inventory that they expected for
3 commercial low-level waste facilities.

4 But the question we have is what makes a
5 waste stream unique? Is it unique because it wasn't
6 in the original analysis? Is it unique by its
7 characteristics? Is it unique for some other reason?

8 And what are the criteria that you should use to
9 determine when it's unique, and then what should you
10 do about it?

11 So, why is depleted uranium unique? Well,
12 it could be unique because of its characteristics.
13 You say it's much more long-lived. It could be unique
14 because of its quantity, or a combination of its
15 characteristics and the quantity of it. Is it
16 concentration that would cause something to be unique?

17 It's a difficult topic to determine, I think, when
18 you would be calling something unique, and when you
19 would have to address the criteria that we will
20 develop for unique waste streams. So, we're basically
21 seeking feedback on how you determine when something
22 is unique, or not, and when it would require the site-
23 specific analysis.

24 My concern in this area is, if you're not
25 explicit enough about when something is unique, then

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1 everything is going to be unique. And you may be
2 imposing analysis requirements on something that are
3 not appropriate. You may be imposing very long-term
4 complicated analysis if you identify a new unique
5 waste stream that's short-lived, for instance. And,
6 in my opinion, that wouldn't be appropriate. So, the
7 challenge for us, I think, is to develop criteria that
8 apply for a specific unique waste stream, like
9 depleted uranium, but then consider whether we need to
10 make some sort of generic, or even like a reserved
11 part to say you need to check and see whether this --
12 what triggers you to say whether your new material is
13 unique, or not. And, if it is unique, what criteria
14 do you apply to evaluate it, or is that simply done in
15 the site-specific analysis process?

16 With the caveat that I said just a bit ago
17 of you have to be careful that the criteria that you
18 develop for the assessment are appropriate for the
19 material that you're trying to assess.

20 MR. CAMERON: Thank you. Thank you very
21 much, David. Let's go to Tom Magette, first.

22 MR. MAGETTE: Thanks, Chip. When I first
23 looked at the way the NRC had defined this problem,
24 and the Federal Register Notices, I thought this
25 notion of approaching a unique waste stream was a good

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1 idea. But the more we vetted this, the more I think
2 it, basically, is overreaching maybe - I don't know if
3 that's too strong a word or not, but I'm reminded of
4 what Beatrice said yesterday about the notion that
5 what's so wrong if we are back here in 20 years?
6 Twenty years is a long time. We know a lot about
7 radiation protection guidelines that have changed,
8 uranium transport has been mentioned. So, there are a
9 lot of things that do change over time that we would
10 want to be able to accommodate, so I don't think we
11 have to answer, and, frankly, I don't know how we
12 would answer how do you account for something that you
13 can't label? I don't think you can define something
14 that you haven't even named, so I don't believe that
15 there's any need for, or way to define the generic
16 unique waste stream in this rulemaking.

17 I believe, and this goes a little bit
18 beyond what I said in Maryland, I actually think this
19 probably falls into the larger rulemaking that you are
20 contemplating in terms of Risk-Informing Part 61. I
21 like the way DOE approaches this problem. And Marty,
22 obviously, can talk better to that than I can, but
23 this notion of a site-specific performance assessment
24 that has a time horizon to it, and some requirement
25 for periodic updates, whether that be driven by

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1 strictly the passage of time, or the loading of
2 various isotopes and waste types that come into a
3 site. But the notion that this is not just a depleted
4 uranium topic, which I think captures your concern,
5 David, about not being overly restrictive in the law
6 of unintended consequences capturing something in a
7 way that's unfairly, or unnecessarily restrictive.
8 But I do think that you're going to capture this in
9 the source term. We didn't talk about this a lot
10 yesterday afternoon, I don't know if it's just because
11 people were tired of looking at each other or what,
12 but we didn't get into source term, and what source
13 term are you talking about the way we did in the last
14 workshop. And the notion that that source term should
15 be the waste that's at the site.

16 If you're going to do a performance
17 assessment, you need to account for whatever it is
18 that you're disposing of, wherever you're disposing of
19 it. So, I think that -- to me, I think we should get
20 away from this broadening of the topic, because I
21 don't think it's really helpful. And, as I said, I
22 don't know how we would do it. I think if we capture
23 the requirement for a performance assessment, and we
24 properly treat the source term, and we have some
25 specific requirements for updating performance

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1 assessments, then we will have addressed the problem.

2 MR. CAMERON: Okay. Thank you, Tom. I
3 think that's a good summary of what we heard in
4 Bethesda. And I think that there was some discussion
5 of the source term considering what's at the site. We
6 did it under the banner, I think, of the term
7 "cumulative". And if I'm not mistaken, that may be
8 something that Vanessa had brought up. But, at any
9 rate, thank you for that summary. And, David, do you
10 have something quickly, or not quickly, but -

11 MR. ESH: Yes, it is quick. Just an
12 example I want people to think of. Say in this case
13 depleted uranium has the potential to emit radon.
14 Okay? And our regulations right now in low-level
15 waste are not clear as to how you would -- whether you
16 would apply a flux limit, or include it in the dose
17 limit, et cetera. So, if you have a unique waste
18 stream, whether it's depleted uranium right now that
19 we're talking about, or something in the future, I
20 still think there needs to be at least something to
21 tell you when you need to look at either the technical
22 analysis in some way, or the criteria that you're
23 applying to insure that you don't have this
24 uncertainty, or ability to not address appropriately
25 the safe disposal of that material. So, that's the

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1 analogy I would make.

2 MR. CAMERON: Thank you for adding that,
3 David, because that's, indeed, the tension, so to
4 speak, between just saying we're going to handle it in
5 the site-specific performance assessment, so there
6 needs to be some consideration of that. Let's start
7 with Beatrice, and we'll go down the row here, and
8 then over to Scott.

9 MS. BRAILSFORD: Okay. I, too, don't think
10 we should try to come to grips fully with this, in
11 this context. But I have a couple of questions, and
12 some concerns that just this preceding discussion has
13 raised.

14 This is for NRC. In the Federal Register
15 Notice, which I realize I didn't bring into the room
16 with me, one of the examples of a unique waste stream
17 was, for instance, waste produced by new reprocessing
18 facilities. And since NRC has flagged this as a
19 problem that you think has to be addressed at some
20 point, and I would say down the road, please tell me
21 what currently extant waste streams you think fall
22 into the unique waste streams.

23 MR. CAMERON: Okay. That's a good
24 question. And, Dave, are you going to try and attempt
25 to answer that?

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1 MR. ESH: I don't have an answer for that.
2 It's a good question, we're going to have to think
3 about.

4 MS. BRAILSFORD: Well -

5 MR. ESH: Maybe somebody else here has -

6 MS. BRAILSFORD: You did the, for
7 instance, new reprocessing facilities, so that had to
8 -- you had to have had a barrel of waste in mind.
9 Right?

10 MR. CAMERON: And Larry Camper may be able
11 to address this.

12 MR. ESH: Yes. I think the bottom line is,
13 we have to try to anticipate things that are
14 significantly different in their characteristics,
15 and/or quantities that would potentially be a low-
16 level waste material. So, besides those two examples,
17 I think, as Tom indicated, it's hard to anticipate.
18 But what I want to know is, is there a way in some
19 generic sense to capture that issue, even if you can't
20 anticipate them today?

21 MR. CAMERON: Okay. Thank you. Thank
22 you, David. Larry?

23 MR. CAMPER: In listening to Tom's
24 comments of a few moments ago, I was reminded of the
25 discussion that took place in Maryland a few weeks ago

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1 on this topic, and then hearing Beatrice's question
2 really brings it to the forefront.

3 The simple answer is, from a process
4 standpoint, the reason we put this question on the
5 table is, looking back at what happened when the Staff
6 created Part 61, 1979-1980, and, clearly, large
7 quantities of depleted uranium were not envisioned, as
8 we discussed yesterday, what we're trying to do is be
9 as visionary as we can now, and not repeat that error,
10 or process, or what have you, again. But aside from
11 the one or two waste streams, waste processing that
12 have been mentioned thus far, we have not identified
13 any.

14 The question was more conceptually, could
15 we put our hands around what unique waste streams
16 might be to prevent what happened thirty some odd
17 years ago, or whenever it was when Part 61 was done.
18 So it's a conceptual question. Is it possible to
19 define unique waste stream? Is that fair, Dave?

20 MR. CAMERON: That's very good, because it
21 let's you know why this is being considered. And I
22 think that's helpful. Beatrice, before we go to
23 Vanessa, something else?

24 MS. BRAILSFORD: Yes. I guess, my concern
25 has now been enlarged.

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1 MR. CAMERON: Thanks, Larry.

2 MS. BRAILSFORD: The assumption is that
3 these unique waste streams will be low-level waste
4 suitable for shallow land disposal, and that is, I
5 don't think that the problem occurred in the '80s. I
6 think the problem occurred a couple of years ago -
7 well, last spring, this spring. So, I mean, I really
8 -- I'm fairly confident that the Federal Register did
9 not say unique low-level waste streams, so I suggest
10 very strongly, let's not go there.

11 MR. CAMERON: Okay. Let's go to Vanessa.

12 MS. PIERCE: Some of my concerns are
13 actually pretty similar to Bea's, which is that the
14 way our current low-level regulations are set up,
15 things are -- too many things de facto fall into the
16 Class A category, things that do not smell, walk, or
17 look like traditional Class A waste. So, I appreciate
18 that this is kind of a difficult dance we're doing,
19 given that there's some interest in revisiting the
20 entire waste classification system, and moving from a
21 concentration-base system to a risk-base system, but,
22 I guess, my concern is that the discussion that we're
23 having now is assuming that these unique waste streams
24 would probably be in that Class A rubric, when, in
25 fact I would posit that they should probably be in a

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1 Class Q rubric, or something like that, because of the
2 unique long-lived nature of those waste streams. And
3 I think it's problematic for the siting of future low-
4 level waste sites that if those sites are going to be
5 sited with the current parameters that are out there,
6 you're not, necessarily, going to have the long time
7 frame that you need to in terms of the performance
8 assessment in order to insure that that low-level
9 Class A site would, in fact, be appropriate for some
10 of these unique waste streams. So, I think that's my
11 main concern.

12 And then, I guess, I just was kind of
13 curious. We've seen reprocessed waste as kind of one
14 of those examples of a potentially unique waste
15 stream. And yet, the Savannah River depleted uranium
16 that's being sent here is from reprocessing, so I just
17 kind of wanted to know if there's any clarity in the
18 NRC Staff's mind about reprocessed uranium, and
19 whether that's DU, or some other type of waste?

20 MR. CAMERON: Could we just do a
21 clarification on that before we move on? Chris?

22 MR. MCKENNEY: Actually, a couple of
23 clarifications. We understand your comment about the
24 generic and default nature of the rules there. But I
25 wanted to clarify that we have not made any

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1 determination that we would be stepping away from a
2 concentration-based classification system for the
3 long-term rulemaking. The risk-informing part may
4 result in changing the numbers a little bit, changing
5 the numbers based on newer understandings of health
6 effects and other things like that, but it could still
7 result in a numeric classification scheme.

8 As to the other one about enriched, sorry,
9 not enriched, but the uranium resulting from
10 reprocessing, that would, potentially, be a -- one,
11 it's very similar to current uranium, so other things
12 that you get from low-enriched uranium facilities that
13 currently get disposed of. So, that is a potential
14 waste stream that would need to be considered in a
15 site's performance assessment, in addition to the fact
16 that reprocessed uranium doesn't contain fission
17 products in it, which is not -- for normal uranium you
18 get if you're just digging up dirt in Toronto, Canada
19 and shipping it down. But, most of all, those already
20 are in the classification scheme, so they would have
21 to be considered.

22 The streams we're talking about that we're
23 sort of envisioning in the -- when we mentioned
24 reprocessing was that there are some waste streams out
25 of a reprocessing plant that are low -- that are

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1 relatively low concentration, that may be different
2 than what we see out in nuclear power plants, and
3 other things like that, of different levels of
4 concentrations of Technetium in them, or Cesium, or
5 other nuclides, but in combination may be different
6 than the waste streams that you would have saw of
7 something else. That was sort of the implied thing of
8 -- and we don't know what those waste streams
9 completely look like, because we don't know what a
10 commercial reprocessing plant's operations are going
11 to be at this time. We don't have rules in place for
12 us, and we don't have actual conceptuels really out on
13 the -- for the United States, we don't have
14 conceptuels out there for that.

15 MS. PIERCE: If I could just say one kind
16 of final thing. I think, to me, that's a very good
17 point, and that's why I think it's important that we
18 hold off on trying to do a whole lot, aside from maybe
19 tag waste streams that would be -- that should be
20 considered as unique, but not set forth any kind of
21 guidance, or parameters, or rules about what to do
22 with them, because we've already heard a lot of
23 criticism and concern that we're trying to set the
24 square peg of depleted uranium into a round hole,
25 which is shallow land burial disposal. And I would

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1 just hope that if there are going to be future waste
2 streams, that we start with a clean slate for those
3 things, and don't just try to shove them into a
4 shallow burial facility.

5 MR. CAMERON: Okay. Thanks, Vanessa. And
6 we're going to go to Dave for a point here. Go ahead,
7 David.

8 MR. ESH: Yes. And I wasn't meaning to
9 imply that in some way we would take any new material,
10 and automatically assume it's low-level waste. We
11 will obey all the definitions and rules regarding
12 waste streams as to how they should be partitioned
13 now. We may have new materials that don't fit in
14 those definitions, or they do fit in the definition of
15 low-level waste now that we would have to address.
16 The bottom line is that the unique waste stream
17 analysis and technical criteria will have to insure
18 that it's safely disposed of, regardless of what class
19 you would think it is. The analysis has to
20 demonstrate a safe disposal, including the things like
21 the panel have talked about, consideration of long-
22 term processes, if necessary. So, that's the bottom
23 line with regard to the unique waste stream
24 rulemaking.

25 MR. CAMERON: Okay. And I don't know if

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1 there's any symmetry here, you use the term Class Q.
2 And I'm just thinking back to one of Tom Magette's
3 comments about this is something that should be
4 considered in the long-term rulemaking that re-look at
5 classification, and maybe that's where that all gets
6 wound up.

7 Beatrice, do you have a quick point before
8 we go to Christopher?

9 MS. BRAILSFORD: I'm sorry. And this is
10 just because I'm not from around here. The 14 tons of
11 depleted uranium that are coming in soon to Energy
12 Solutions from the Savannah River site, I guess my
13 understanding had been that it is from reprocessing,
14 which is kind of weird, to me. Thank you. It's not?

15 Okay. So, I would appreciate an explanation of that.

16 But, also, just circling back, I'm a little bit of a
17 reprocessing obsessive. Was NRC thinking of any waste
18 streams from pyro processing, electrometallurgical
19 reprocessing, or were you thinking only of aqueous
20 reprocessing, when you use that as an example of a
21 unique waste stream?

22 MR. McKENNEY: We're not that specific at
23 this point. We were thinking just a really broad
24 picture, really big idea of, if some -

25 (Simultaneous speakers.)

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1 MR. MCKENNEY: In 1980, we didn't have
2 reprocessing. We had an Executive Order that said
3 there would be no commercial reprocessing of waste.
4 And that's why we're saying, you know, of these waste
5 streams, what are things that weren't some of the
6 things from a big picture point of view, and that's
7 why we put that example. But from a big picture point
8 of view, what is a source of waste streams that were
9 not included potentially in the Part 61 analyses.

10 MR. CAMERON: And I think it's important
11 to get a clarification here on something, and I'm
12 going to go to our staff that deals with reprocessing
13 on this. And, Beatrice, in terms of your specific
14 question, is that if that can be done offline, that's
15 probably the way to deal with that, in terms of what's
16 coming in here, unless when we get to Tom Magette, he
17 has something to say on that. That would be fine.
18 And please introduce yourself.

19 MS. MARKHAM: Kelli Markham, NRC. I am
20 leading the Agency's working group for developing the
21 regulatory framework for reprocessing, for licensing
22 reprocessing facilities. And I would just like to say
23 that as part of our effort, we have identified some of
24 the issues that are being discussed here, but it is
25 premature to start discussing specific waste streams

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1 at this point. We are developing a series of public
2 meetings to talk about this issue, and this issue, in
3 specific. So, we would, at that point, have a little
4 bit more to say on that.

5 MR. CAMERON: Okay. Thank you. Thank
6 you, Kelli. Let's go to Christopher.

7 MR. THOMAS: Well, as I'm sitting here
8 right now, I don't think this is that complicated of
9 an issue, because, to me, Class A -- right now, in
10 regulations Class A is this catch-all generic, as
11 Vanessa said. But it doesn't have to be written that
12 way. I mean, to me, the Class A should not be defined
13 as what is excluded from the other categories, it
14 should be an affirmative. And the way you get to
15 those affirmative radionuclide concentrations is you
16 look at what was analyzed in the EIS that is the basis
17 of the waste classification system now. Once you have
18 Class A being an affirmative, essentially, category,
19 then everything else that was not analyzed in the
20 underlying analysis becomes Class Q, or whatever you
21 call it. And under that way of looking at it,
22 depleted uranium of this quantity would fall into
23 Class Q. It would not be Class A.

24 And just to go along with that, I mean, I
25 really -- I'm very concerned that the initial approach

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1 taken on this was hey, let's -- instead of calling
2 this Class Q, let's call it Class A. Well, because we
3 all know that it's so different than what was
4 originally conceived of as Class A, so we've been
5 calling it Class A with an asterisk, to mean that it
6 is totally different. So, I would feel much more
7 comfortable with a way of doing things that, like I
8 said, takes Class A, makes it an affirmative category,
9 and creates a new class for everything that was not
10 analyzed as part of the classification table
11 framework.

12 And then the other thing I did want to say
13 is that, I think there's a topic on this later, but we
14 started talking a little bit about this new
15 categorization. Well, risk-informing the current
16 classification scheme. I do want to just note that I
17 have a concern that a state like Utah, that may say
18 hey, we don't want to take Class B and C waste, which
19 is what we have said, as a state. I would want to make
20 sure that any new classification not undermine a
21 state's ability to do something like that, kind of
22 retroactively, because in conversations we said well,
23 what if after the new waste classification, we don't
24 have a Class B and C anymore, they're called something
25 different. I just would want to make sure that if a

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1 state like Utah had said certain things as a matter of
2 policy, that those not be somehow totally dissolved as
3 an unintended consequence of changing the waste
4 classification structure. Thanks.

5 MR. CAMERON: Okay. Thank you,
6 Christopher. Let's hear from Peter.

7 MR. BURNS: I agree with what we're saying
8 regarding reprocessing waste streams. I think it's
9 completely unreasonable to predict what those might
10 look like at this moment in time. And it probably is
11 reasonable to assume we will be seeing some of those
12 somewhere in the next decades, but what they'll look
13 like, who knows? There's a lot of emerging chemistry,
14 and uranium chemistry that could change the game
15 totally relative to the reprocessing methods that we
16 have right now.

17 I wanted to try to respond to the actual
18 question, which was, should there be a trigger to call
19 it a unique waste? And I know nothing about these
20 different classifications of waste streams, and so on.

21 That's not my -- the realm I live in, but if I had to
22 identify a trigger, it would be the length of risk,
23 the length of time. And, in other words, it would be,
24 is this particular waste that may be defined a unique
25 waste stream, is this particular waste -- does it

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1 still pose a significant risk to the environment, and
2 to human health beyond the regulatory time frame
3 that's set out for the waste site? And, if it does,
4 then it's something special. Does special equal
5 unique? I don't know, exactly, but, to me, if it's --
6 for example, from a reprocessing site, if we're
7 disposing of Cesium 137, well, it's gone after 175
8 years, or 200 years, or whatever. That's very
9 different than if we're disposing of Technetium 99 in
10 some sort of a waste form, because it's half-life is
11 200,000 years. So, this distinction of what becomes
12 unique, to me, might be based on time relative to
13 performance.

14 MR. CAMERON: Thank you, Peter. And,
15 David?

16 MR. KOCHER: Yes, I think this can be
17 done, and I think Christopher, basically, had the
18 right idea. I would flesh it out a little bit. I see
19 that the fundamental problem here is that your
20 classification tables contain too few radionuclides,
21 potentially. So, I think what might work, and please
22 don't go away saying that this is the only way to do
23 it, what might work, the flaw in the present system in
24 Part 61 is that you have no requirement for a site-
25 specific intruder dose assessment. It's all done

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1 generically to develop the waste classification
2 tables. And the boogeyman here is the Class A
3 problem, where everything that's not in the tables
4 gets dumped in there. So, a way, not the way, a way
5 around this is to require site-specific intruder dose
6 assessment for radionuclides that are not in the waste
7 classification tables. And if it's above some -- if
8 it doesn't qualify as Class A waste, or some fraction
9 of Class A waste, because you have to apply this sum
10 of fractions rule to everything, then that's a
11 trigger. I think that could work.

12 This is, basically, what DOE does. DOE
13 sets disposal limits for everything, and they're not
14 anticipating what may or may not be in waste streams.
15 They do it for the periodic table, and go home.

16 MR. CAMERON: Okay. And we're going to
17 get to Marty, and DOE on this. Let's go to -- Larry,
18 do you have something on this that -

19 MR. CAMPER: I thank my colleagues in the
20 State of Washington for using his -

21 MR. CAMERON: Okay.

22 MR. CAMPER: No, I want to share with the
23 panel, we got to an interesting point in the
24 discussion in Maryland, and I think you should have
25 the benefit of that knowledge currently.

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1 As I said a few minutes ago, the staff
2 started trying to explore this conceptually. Could
3 we, should we, can we identify the concept of unique
4 waste? And we did so for the reasons that I said a
5 moment ago; and that is, is it possible, or to what
6 extent is it possible to prevent, or at least mitigate
7 the process that occurred in 1979-1980.

8 The panel had a discussion much like this
9 one. At some point, someone on the panel said look,
10 you really don't need, and shouldn't try to define a
11 unique waste stream, because, in fact, if you require
12 a site-specific performance assessment, you will have
13 to address, necessarily, then that particular waste.
14 Therefore, NRC, don't waste a lot of time and energy
15 trying to define unique waste stream, because you
16 don't have to. Your site-specific performance
17 assessment will get at that.

18 At that point, I then shared with the
19 panel what I'll share with you now. And what I shared
20 with them is some mission words that came out of an
21 order, CLI-05-05 in the matter of LES on January the
22 18th, 2005. The Commission stated: "Indeed, when Part
23 61 was issued, its Environmental Impact Statement
24 explicitly acknowledged that the NRC might receive
25 license applications involving disposal of low-level

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1 radioactive waste requiring either an enhanced near-
2 surface disposal method, or intermediate land disposal
3 methods. It was, and remains, the NRC's intent to
4 retain the flexibility to be able to address these
5 license applications in the existing framework, Part
6 61 Rule, and in the end, the bottom line for disposal
7 of low-level radioactive waste are the performance
8 objectives of 10 CFR Subpart C, which set forth the
9 ultimate standard and radiation limits for, one,
10 protection of the general population from releases of
11 radioactivity; two, protection of individuals from
12 inadvertent intrusion; three, protection of
13 individuals during operations; four, and stability of
14 a disposal site after closure. Thus, while there may
15 not yet be detailed technical criteria established for
16 the kinds of license disposal that might be proposed
17 under Part 61, criteria can be developed on a case-by-
18 case basis, as needed. Specific disposal requirements
19 for more stringent land disposal methods, therefore,
20 we left to be addressed in an action on a specific
21 application, subsequent guidance, and rulemaking
22 effort, if rulemaking is warranted." End of quote by
23 the Commission in that order.

24 I asked the panel, given what they had
25 reached in their discussion about the lack of a need

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1 to define conceptually unique waste streams, and the
2 fact that a site-specific performance assessment would
3 get at that, didn't that position, that thought, seem
4 to be consistent with what the Commission has
5 articulated in the order? And there was general
6 agreement, I think it's fair to say, or, certainly,
7 not disagreement with the fact that yes, that was the
8 case. I just wanted everyone to have the benefit of
9 that discussion that took place in Maryland. Thank
10 you.

11 MR. CAMERON: Okay. Thank you, Larry.
12 And we're going to go to the tents that are up now.
13 And if anybody, including you three, has any comments
14 on what Larry just put on the record, please feel free
15 to comment on that. Scott?

16 MR. KIRK: Well, I agree that unique waste
17 streams would be very difficult to define in a
18 rulemaking, but I would say the analog should be
19 viewed as sort of an unreviewed safety question. If
20 you developed a framework for intruder scenarios, and
21 you've already bounded your performance assessments
22 with various waste streams which defines your source
23 term, it could be handled in licensing space. And
24 what I mean by that is, if you get a new waste stream
25 that comes in, and it's not included in your

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1 application, or your performance assessment, and it
2 hasn't been bounded by your performance assessment,
3 then the rule could trigger, you know, you update your
4 performance assessment. You send it to your state
5 regulator, and they review it in this particular
6 context. And NRC has plenty of experience on handling
7 things for change control and the source of things, so
8 it seems to me that would be a very viable solution to
9 this problem.

10 MR. CAMERON: Thank you very much.
11 Thanks, Scott. Marty?

12 MR. LETOURNEAU: Why don't you do Tom,
13 first?

14 MR. CAMERON: Okay.

15 MR. MAGETTE: I appreciate a lot of the
16 comments that have been made, particularly, where
17 David was heading. Although, I still don't think that
18 was the topic for this rulemaking. I don't agree -- I
19 don't disagree that we shouldn't go there, but this --
20 the discussion of reprocessing is illustrative, I
21 think, of part of the problem, as I think Kelli, and
22 Chris, and David have clarified. Just to state it
23 explicitly, there's no such thing as a reprocessing
24 waste stream. You have multiple waste streams, some
25 may be Class A, some may be other low-level waste

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1 that's not Class A, some may be transuranic, some may
2 be high-level. We don't know, as it was also pointed
3 out, until we do have technology. There are existing
4 technologies in other countries that we use, that do
5 produce specific waste streams, but those are also
6 being debated in this country because of other
7 concerns, for example, non-proliferation concerns that
8 you might want to change either the waste streams, or
9 what goes into the new fuel. But the thing that's
10 illustrative about that part of the discussion is,
11 it's focusing on the source of the waste, as opposed
12 to the need to protect the public health and safety
13 and the environment from the impact of disposing the
14 waste.

15 I would argue that the source of the waste
16 is, essentially, unimportant. And we have created a
17 system by virtue of necessity at the time it was
18 created, that was dependent upon where did it come
19 from? Where it came from is not as important, I would
20 argue even that it's not important at all, but
21 certainly not as important as where it's going. So, I
22 don't think you're going to end up with lots of de
23 facto Class A waste streams, which I think goes to
24 Vanessa's concern. But that's what I think you want
25 to get the focus on. That's what I believe is the

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1 focus of the next rulemaking, not that they have to be
2 separate, but as currently constructed, they are.

3 I also understand David's point, and I
4 appreciate that sensitivity, but I also would argue
5 that if you have a broader requirement for a
6 performance assessment, that you, I don't think,
7 should be -- I would say you wouldn't find yourself in
8 the position. If you also make changes to Subpart C,
9 which I think you should, as much as I argue a lot of
10 this belongs in guidance, I also think there are some
11 things in guidance today that belongs in regulation.
12 Because (A), you don't want to, necessarily, give
13 people flexibility there, and you want to clarify
14 what's required. But if you do put those dose
15 requirements for an inadvertent intruder, and period
16 of performance into Subpart C, then I don't think
17 anybody would be able to argue that they don't have to
18 address radon.

19 What you talked about when the draft EIS
20 was prepared for Part 61, I mean, the reason certain
21 pathways were excluded, because of the relative
22 contribution of the isotope, or the exposure to dose,
23 made perfect sense, makes perfect sense. But nobody
24 should be able to look back to that, to justify not
25 analyzing an impact that's real. I'm certainly not

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1 suggesting that we should. That's why I go back to
2 saying the performance -- the requirement for the
3 performance assessment to meet the performance
4 objectives of Subpart C captures these issues. And I
5 believe that if you do this properly today, you have,
6 essentially, informed how the next rulemaking will
7 look. I think you can risk-inform Part 61, but I
8 think these issues all get captured in a performance
9 assessment requirement, if it's correctly articulated
10 in the regulations. And I think it's analogous to
11 what DOE does, where, essentially, you look even at
12 waste loading capability of a site, and you reassess
13 when you're approaching those limits that you said
14 were okay for this site, or if you have something
15 coming in that you didn't analyze, you want to have
16 something come in that meets your classification
17 requirement, and, yet, you didn't analyze that waste
18 type, or those isotopes, or that waste form in your
19 existing performance assessment, then you have a
20 requirement that you look at them. And it's not a
21 start from scratch, reinvent the wheel, build a model.

22 I mean, DOE does these kinds of updates in a matter
23 of weeks, because once you've built that framework,
24 and you have it in place, it's not then that
25 overwhelmingly difficult of a challenge to update, to

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1 review the changes in the waste types, or the waste
2 loadings that you're talking about. So, I think it
3 all comes back to the performance assessment, and the
4 performance objectives.

5 MR. CAMERON: Okay. Thank you, Tom. And
6 as many of you said, and I think Tom just said it,
7 specifically, some of what you're discussing here is
8 also going to be directly related to this discussion
9 later on this afternoon about the long-term
10 rulemaking. And one suggestion that we just heard
11 from Tom is Subpart C and this rulemaking for a site-
12 specific performance assessment, that may be very
13 instrumental in terms of what is done, what comes out
14 of the long-term rulemaking.

15 Marty, we've heard a lot about DOE, so
16 let's go to DOE.

17 MR. LETOURNEAU: Well, I think what I just
18 heard is that Tom agrees with what Larry read. I
19 mean, I was hearing -

20 MR. CAMERON: Thank you.

21 MR. LETOURNEAU: And I think that that is
22 a very good focus, and captures the issues. If there
23 is a need to develop a definition of what a unique
24 waste stream is, I think David Kocher has an elegant
25 solution. It's what's not in the tables. But what I

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1 wanted to address is this idea of reprocessing waste.

2 (Off mic comment.)

3 MR. LETOURNEAU: No, no, no, no. That's
4 okay, Beatrice. I just want to make sure that
5 everybody understands what we're talking about,
6 because we use it as a verb, and an adjective, and on
7 one level it's very innocuous, and on another level,
8 it's a term of art that has very specific
9 implications. So, the piece from the Federal Register
10 Notice, which I did bring, that you were referring to
11 is, Question II-1.5. "Should the NRC consider waste
12 streams that result from spent fuel reprocessing, and
13 are not high-level, or greater than Class C waste in
14 the definition of unique waste streams?"

15 Typically, when we're talking about
16 reprocessing, that's code for reprocessing of spent
17 fuel. That's important, as many of us know, because
18 the Nuclear Waste Policy Act definition is that waste
19 from reprocessing of spent fuel is high-level waste.
20 So, when we talk about reprocessing of other things,
21 we're not, necessarily, talking about generating high-
22 level waste. But if we are talking about reprocessing
23 of spent fuel, then we are talking about generating
24 high-level waste. And the issue that some of us have
25 been bouncing around here is, that some of those waste

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1 streams that come from reprocessing of spent fuel,
2 that otherwise fit the definition of high-level waste,
3 may be very dilute, may have very low concentrations
4 of key radionuclides, and could be solidified, be less
5 than Class C limit, and be managed to meet the low-
6 level waste performance objectives. And I think
7 that's really the issue that you were talking about,
8 isn't it?

9 MS. BRAILSFORD: It's part of the issue.

10 MR. CAMERON: Okay. Could we -- it's part
11 of the issue is the response from Beatrice. Okay.
12 Thank you. Thank you, Marty. Let's go to Vanessa.

13 MS. PIERCE: Two -- well, one just quick
14 thing. I was wondering if, at some point, Larry could
15 provide us a copy with the statement that he read,
16 because it's a little bit hard for some of us to
17 process things if we don't read that technical
18 language.

19 MS. BRAILSFORD: Or reprocess them.

20 MS. PIERCE: Or reprocess them, exactly.
21 And I wanted to respond to some of Tom's comments. I
22 agree that it's problematic that we have more of a
23 nuclear waste caste system than a classification
24 system. I know I'm not the first one to have said
25 this, but I think it's a good analogy. We look and

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1 care more how the waste was born, than on its
2 radiologic characteristics. And an example of why I
3 think it would be good to reexamine that is, here in
4 Utah, we've had a problem with mill tailing waste
5 being reclassified, or renamed, so that waste can be
6 disposed of at a low-level waste site, that in certain
7 concentrations that might not have jived with our
8 existing standards for Class A, B, and C. And you
9 also have a similar issue of waste that should be
10 treated as low-level waste, being processed through a
11 uranium mill, and the State of Utah raised concerns
12 about sham disposal. So, I think that if you got rid
13 of the caste system, and just looked at the properties
14 of the materials themselves, you wouldn't have these
15 kind of strange loopholes of waste going to facilities
16 that might not normally be important, if you actually
17 just looked at the radionuclide.

18 MR. CAMERON: Okay. Thank you, Vanessa.
19 And what Larry read is a public document, and, of
20 course, it can be reached through the NRC website, but
21 Priya has assured me that we would try to make
22 copies, hard copies of that segment of it available
23 this afternoon.

24 (Off mic comments.)

25 MR. CAMERON: I think we should give it to

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1 everybody. Okay? So, we'll do that for you. And if
2 you want to see the whole opinion, it is accessible
3 through the website. And if you want some guidance
4 about how to find it on the website, we'll be doing
5 another two-day workshop on that.

6 MR. CAMERON: No. We'll try to tell you
7 how to get to that. Christopher?

8 MR. THOMAS: Well, I think we just had a
9 rare, I might even say beautiful moment of rare
10 agreement between Heal Utah, and Energy Solutions, I
11 suspect. So, I kind of hesitate to say what I'm going
12 to say now, but there was a lot that I liked in what
13 you said, Tom. The problem -- so, if you look at what
14 Larry read, and what I think Tom largely agreed with,
15 in principle, it sounds good. It sounds really good.

16 However, I've got to compare that with what has
17 actually happened. And part of my criticism is that
18 in the site that I'm most familiar with, which is the
19 Energy Solution site, I've seen letters from the site
20 to the -- I think this particular letter was to the
21 NRC, and it said look, we've already done a site-
22 specific analysis on our site with depleted uranium,
23 and according to that, you could fill the entire site
24 with depleted uranium, and it would meet the
25 performance objectives.

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1 So, you have to ask yourself why? And you
2 have to ask yourself what were the assumptions
3 underlying that analysis, that reached that
4 conclusion. So, I guess my concern is that the
5 principle on paper, and the reality, to me, have had a
6 big disconnect. And, David, when I hear you talk
7 about your concern, I think what we're really talking
8 about is a higher standard of review, potentially, for
9 unique waste streams that were not considered in the
10 previous low-level waste classification rulemaking.
11 And I tend to agree with that.

12 And I'll go back to what I said before,
13 that, to me, this isn't that difficult. You've got a
14 space that's been analyzed, and you've got a space
15 that's been unanalyzed. That space that's been
16 unanalyzed should probably have a very set standard of
17 review, so that, at least, there's some agreement from
18 the parties up front what's important to deal with,
19 and what isn't.

20 MR. CAMERON: Okay. Thank you, and I'm
21 glad you brought that back up to a generic point. I
22 mean, it's always easy to go into what is happening in
23 Utah now. And, obviously, a big issue of concern for
24 everyone, including the licensee -- and we're not here
25 to debate the merits of the Clive disposal, but the

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1 issue of what happens if there are more stringent
2 requirements. The difference between the principle
3 that Larry read, and the reality is an important issue
4 for the NRC to consider. And we may get back to that
5 again when we talk about what are the Agreement States
6 doing in the interim? What happens when the NRC rule
7 comes out? What implications would the NRC rule have
8 for the existing Agreement State schemes?

9 David, and then we'll -- Dave, did you
10 have something else you want to offer before we go to
11 Dave?

12 MR. ESH: Mine was just along what Chris
13 said. I think he expressed the view that I was trying
14 to express, initially, but maybe not from a depth of
15 review standpoint, but in a clarity of regulatory
16 requirement standpoint. But it's, essentially, the
17 same concept of how do you insure that reality meets
18 the principle?

19 MR. CAMERON: Good. Okay. Great. Let's
20 go to Dave Kocher, and then Tom Magette, and then
21 perhaps we'll see if the public has anything on this
22 particular issue. David?

23 MR. KOCHER: Yes. Can I say, I basically
24 agree with Tom and Marty's opinion that my scheme
25 would work. I do have one concern about the statement

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1 by the Commissioners, and that is, what do they mean
2 by "site-specific assessment?" Because in NRC space
3 that term doesn't mean site-specific intruder dose
4 assessment. It only refers to the off-site stuff.
5 So, this is the major thing that would have to be
6 incorporated into this process for performance
7 assessment to handle the problem.

8 MR. CAMERON: Does the NRC agree with
9 David's characterization that it does not include the
10 intruder?

11 (Off mic comment.)

12 MR. CAMERON: Okay. The NRC agrees. Go
13 ahead, David, put that on the record.

14 MR. ESH: Yes, I agree with David,
15 currently.

16 MR. CAMERON: Okay. And, Tom?

17 MR. MAGETTE: I think that, obviously, I
18 agree with David, too. I think it's clear, that's I
19 think the reason we're here. I mean, I have said that
20 I think that Subpart C should be tightened up to take
21 what's currently in guidance, and put in the
22 regulation. We don't have any objection to that. So,
23 without trying to discuss performance assessment of
24 Clive, per se, or what's been done, or why it was
25 done, or what the regulatory standard that was done to

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1 meet, apart from that, I think what we're trying to do
2 today, essentially, is advance the ball. And, also,
3 with the risk-informing approach to the overall Part
4 61, I think it's important to recognize, this came up
5 a little bit yesterday, this is why I had you put this
6 in the parking lot, Chip, about Part 61. Part 61 is
7 license requirements for the disposal of radioactive
8 waste. And it reads, in many cases, like it's a
9 siting, or a licensing analysis that you would do on
10 the front end, and once you've done it, you're
11 finished. And Vanessa had some questions about this
12 yesterday. But it's a rule that applies -- it wasn't
13 used to license the Clive site, but it certainly
14 applies to us. And we have to comply with those
15 regulations, even Subpart D, that seemingly might have
16 had only some application in the past. That's not the
17 case. Licenses can be modified, licenses can be
18 revoked. That's a real time regulation that we have
19 to comply with in real time, or, in our case, in an
20 Agreement State with the Utah version of that. So, I
21 think -- I just want to be clear about the
22 application, the broad application of Part 61, however
23 you might read it, those words at face value. It does
24 apply, and to the extent that we don't comply, there
25 is regulatory action that can be taken. So, I think

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1 what we're looking at in this process is a way to
2 establish what it is that you have to do in a
3 performance assessment, when you have to do it, and
4 how you then demonstrate that you comply with the
5 performance objectives in Subpart C. Going back to
6 the agenda topic of this session, does one then,
7 therefore, need to come up with a new definition of a
8 unique waste stream in order to accomplish that? I
9 would say no, you don't.

10 MR. CAMERON: Okay. Thank you, Tom.
11 Marty?

12 MR. LETOURNEAU: One of the themes that we
13 have touched on throughout the two days is what goes
14 into regulation versus what goes into guidance. And I
15 think that this is, again, a good example of where are
16 you on the margin? If you put enough into the
17 regulation, do you need to put a little bit more? I
18 can look at Part 61, specifically, the performance
19 objective for protection of the intruder, and I can
20 say that implies nothing in terms of a site-specific
21 analysis. That could be, just tell me what general
22 things you're going to do to protect the intruder.
23 How big are your boulders going to be? What signs are
24 you going to put up?

25 Alternatively, in 435.1, we went a little

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1 bit further, and we said you will do an analysis of
2 the potential for impact to an intruder, both in an
3 acute scenario, and a chronic scenario, and you're
4 going to use 100 millirem, and 500 millirem for your
5 objectives that you're going to measure against. So,
6 again, this is just one of those issues of yes, maybe
7 we need to revisit how much is in the regulation,
8 versus how much is in the guidance.

9 MR. CAMERON: And DOE Order 435.1 might
10 give an example of how you might, in terms of the
11 intruder, of how you might deal with that.

12 MR. LETOURNEAU: I'm not saying that's the
13 way to do it, but that's what we did.

14 MR. CAMERON: Okay. Thank you very much.
15 Thank you all for that discussion. Do we have
16 anybody in the audience on unique, who wants to
17 comment, or ask questions about unique waste streams?
18 And, Dirk, I'm going over towards you.

19 MR. DUNNING: A couple of things. You've
20 covered a broad range this morning. The first thing
21 I'm struck with is, you were talking about potentially
22 redoing the classification scheme entirely. And the
23 thing that is interesting about that is, that if you
24 wait long enough, all things come around and are new
25 again. 2009 marks the 20th anniversary of a Joint

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1 Petition by the States of Oregon, Washington, and the
2 Yakima Nation to do precisely that.

3 One of the comments that, or questions
4 earlier, had to do with reprocessing. One of the
5 things I'd encourage you as you think through this,
6 consider that if you do the reprocessing, or if that
7 somehow gets folded into this, or later rules or other
8 actions, that you also need to be thinking about all
9 the other ancillary and associated facilities, whether
10 it's fuel fabrication, vitrification facilities, pre-
11 treatment facilities, treatment facilities, there's a
12 long list. And it's likely much too long and complex
13 to fold into this process.

14 The other one, in thinking about some of
15 the questions earlier about Technetium and some of
16 other specific ones, is to remember, and this really
17 for everybody, to remember that if this is really that
18 broad a rulemaking, that those things include things
19 like the mortonite filters for silver, and the
20 zeolites, and ultra filter leavings, and all kinds of
21 other things. Particularly, DOE is coming up against
22 this now looking out 10 years from now at the
23 operation of the vitrification plant at Hanford, where
24 there's a whole lot of things there that are going to
25 end up being miscellaneous cats, and stray dogs, and

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1 some of them are going to be really difficult to deal
2 with, and really hot. And they're going through a lot
3 of these processes in parallel with the things you're
4 beginning to talk about.

5 The one question I'd have for you is, at
6 the same time, DOE is also dealing with other
7 leftovers of days gone by. In particular, a very
8 large quantity, about 2 metric tons of Uranium-233.
9 The current plan for that is to dilute it to 1 percent
10 in U-238, and dispose it at WIPP as transuranic waste.

11 For that, and thorium waste, and other related things
12 that are also stray cats and dogs, is this process
13 intended to address those, as well?

14 MR. CAMERON: Dave, stray cats and dogs?

15 Okay. I guess that's the answer. And we
16 may want to talk to Dirk offline more on that. Chris,
17 did you have something to say on that?

18 MR. McKENNEY: Stray cats and dogs is the
19 point of sort of trying to say do we need a definition
20 of unique waste streams? But, also, making sure that
21 the philosophy of any changes are such that they are
22 broad enough, have the right triggers in place and
23 stuff to analyze if those radionuclides aren't
24 properly analyzed for a disposal site. I think from
25 the discussions that we just had, I think that's the

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1 philosophy that came out, was are you still within the
2 envelope of you've already assessed for safety of the
3 facility, or is it something that is different in some
4 aspect from what was already analyzed? So, if it is,
5 then you're going have to re-analyze. I think that's
6 from the discussion. So, will we look at a specific
7 cat or dog that's been listed? I don't think that
8 that was the point. The point was more of, you need
9 to set up the process such that you can just find out
10 when you do have a cat or dog, and then you need to go
11 down the point of assessing that, specifically.

12 MR. CAMERON: Okay. Thank you, Chris.
13 John Greeves?

14 MR. GREEVES: Yes. Good discussion this
15 morning. I'd just point out that this discussion of a
16 Class Q, that's a good concept. And I would -- if I
17 had to do that, at the present time, I would point to
18 61.58. The people that put together Part 61, I don't
19 know whether it was wisdom, or just luck, or
20 something, but they built in a 61.58 provision. And
21 if you get what I call an unreviewed safety question,
22 whoever you are, the NRC and Agreement State, you have
23 the opportunity to run into 61.58 and chase this Class
24 Q question. So, it's there. In fact, I'll assert the
25 NRC Staff has been doing this for a long time, and

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1 they do it under the 3116 waste determination process.

2 And you use a 61.58 process to answer the Class Q
3 question. So, Chris, you know what I'm talking about?

4 MR. MCKENNEY: I'd say we do something
5 similar that would be expected in a 61.58 analysis.
6 We don't actually do it under 61.58.

7 MR. GREEVES: For all practical purposes,
8 it's a 61.58-type analysis, so I -- it answered the
9 lady's rightful question about hey, it's not in the
10 tables. Dave said that. Okay. You don't need
11 actually a rule change to chase that issue. There's
12 something in Part 61 that allows you to address an
13 unreviewed safety question right now.

14 MR. CAMERON: Thank you, John. And,
15 Vanessa, I guess you added a new phrase to the
16 Lexicon, Class Q. And did you have something you
17 wanted to say?

18 MS. PIERCE: Just one real quick second
19 plug for, I think the easiest way to nail down what
20 would be in Class Q, is to nail down, as Christopher
21 said, what's in Class A. Once you define Class A, then
22 whatever falls outside of that goes into Class Q. And
23 that can trigger the -

24 MR. CAMERON: Okay. Thank you. And,
25 let's go out for a final question or comment here

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1 before lunch. Yes, ma'am. And please introduce
2 yourself.

3 MS. CHANCELLOR: Denise Chancellor from
4 the Utah Attorney General's Office. Have you given
5 any consideration to what may be considered unique
6 waste streams to be imported from foreign countries?
7 And I have a second question, and that is, if you go
8 forward with unique waste streams as Class A waste,
9 how would that dovetail with NRC's proposed changes to
10 waste blending? Could a licensee meet performance
11 objectives through waste blending? Thank you.

12 MR. CAMERON: Okay. Thank you, Denise.
13 Can someone from the NRC answer both of those
14 questions?

15 MR. MCKENNEY: Again, I think whether it's
16 foreign or domestic, I think the way that coming into
17 either the Class Q, or the general concept that if
18 it's not been analyzed coming into the site, and it's
19 not within the envelope already analyzed, then it
20 would require some level of analysis, and to make sure
21 that the time frames are appropriate, and everything
22 else, for the material -- the radioactivity within the
23 material that is coming into the disposal site.
24 Whether it's foreign, or it's domestic.

25 As to the other one on blending, which is

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1 outside of the DU, and some other issues of this,
2 which is more of a particular about characterization,
3 and classification, and when do you actually classify
4 a material when it becomes waste? At what point in
5 the process? That's sort of outside today's
6 discussion, and is a matter that we are going to have
7 public meetings on, changes to the Branch Technical
8 Position on concentration averaging in the future.
9 We're trying to set that up, and that would be the
10 forum that we could get into much more details about
11 the idiosyncracies about that.

12 MR. CAMERON: Okay. And Larry Camper?

13 MR. CAMPER: Thank you, Chris. I would
14 only add to that a couple of points. At the moment,
15 there is no policy consideration in play with regards
16 to changing anything relative to the term "blending".

17 The Staff is currently working to revise and update
18 the Branch Technical Position on concentration
19 averaging. Blending could be touched upon in that
20 guidance update. What you have today is a set of --
21 blending, as we had said recently in our letter to
22 Energy Solutions, blending is not prohibited by
23 regulations, nor is explicitly addressed by a
24 regulation. You find different verbiage over time in
25 guidance space about this concept of blending, whether

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1 you can do it, you can't do it, to what extent you can
2 do it, and so forth.

3 The Staff is gathering a lot of
4 information about blending. We're thinking about it a
5 lot. We may, at some point, determine that it would
6 be appropriate to speak to the Commission, confer with
7 the Commission about blending in policy space, but we
8 have not done that at this point.

9 MR. CAMERON: Okay. Thank you, Larry.
10 We're going to break for lunch. There is a buffet,
11 and Priya, correct me if I'm wrong, but isn't it out
12 in this tent? Okay. So, the buffet, no tent. So,
13 sorry about that, but there is a buffet. We have an
14 hour for lunch, so come back around 1:00. Thank you.

15 (Whereupon, the above-entitled matter went
16 off the record at 12:01 p.m., and resumed at 1:15
17 p.m.)

18 MR. CAMERON: Okay. I guess we'll get
19 started with the first topic for this afternoon. And
20 just let me do an agenda check, and then maybe we'll
21 get all the rest of the people here. We're going to
22 start out with Agreement State Compatibility. Then
23 we're going to go to the Long-Term Rulemaking on Waste
24 Classification, because we know there's interest in
25 that. And there's been a lot of implications for that

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1 out of things that have been said over the past day
2 and a half. Then we have Other Considerations, and we
3 had some specific things in mind when we put that on
4 the agenda. We also have some related topics to add
5 to that, and some parking lot items. And then we're
6 going to wrap-up around the table, and we're going to
7 listen to anybody who wants to make a comment to the
8 NRC. And all of this discussion, all of the comment
9 from the public is happening before the NRC makes a
10 decision, so we're looking forward to that as being
11 helpful to us.

12 And, with that, are you ready? Duncan
13 White is going to tee up the Compatibility issue for
14 us. It's a little longer than some of the tee ups, so
15 just because we want to make sure that you have the
16 information about how this works. And, Dave, did you
17 want to offer anything? Okay. Go ahead, Duncan.

18 MR. WHITE: Thanks a lot, Chip. Yes, good
19 afternoon, everybody. Again, my name is Duncan White,
20 and I'm the Branch Chief for the Agreement Statement
21 Program Branch to the NRC. And I'll be discussing
22 Compatibility of Agreement State and NRC regulations.

23 Needless to say, compatibility is a
24 complex issue. And before I talk about compatibility
25 and its role it plays with Agreement State and NRC

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1 regulations, I'd like to provide some background for
2 you on the compatibility, and the NRC's Agreement
3 State program.

4 The Agreement State program has been
5 around for almost over 50 years now. Congress passed
6 Section 274 of the Atomic Energy Act in response to
7 increased state interest in radiation protection, and
8 to also provide a mechanism to turn certain classes of
9 radioactive materials to the states.

10 So, what is an Agreement State? It's a
11 formal agreement between the Governor and the NRC
12 Chairman, in which the NRC discontinues certain
13 authorities, and the state assumes the regulation of
14 radioactive material within its borders. The
15 authorities assumed by the state normally include the
16 regulation of byproduct, source, and special nuclear
17 material less than a critical mass. It also may
18 include the regulation to evaluate sealed sources and
19 device, low-level waste disposal, and uranium
20 recovery.

21 States become Agreement States for a
22 variety of reasons. Recently, the assumption of NARM
23 authority by the NRC under the Energy Policy Act of
24 2005, was a driving force for Virginia and New Jersey
25 to become Agreement States. Motivated for nearly all

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1 states to become Agreement States is to bring the
2 various aspects of radiation protection under one
3 roof. State regulation allows the states to exercise
4 regulation oversight tailored to their local concerns
5 and needs. Lower fees than the NRC, and maintaining
6 these fees locally are also a strong driving force.

7 Besides the distinct feature of
8 discontinuing certain authorities, instead of the
9 typical federal-state relationship of delegating a
10 program, the Congress envisioned the Agreement State
11 Program to promote an orderly regulatory pattern, and
12 encourage the states and the NRC to cooperate in the
13 development of radiation standards.

14 Although, NRC discontinues its regulatory
15 authority to an Agreement State, it does maintain an
16 element of that responsibility to insure that the
17 Agreement State maintains a program that is adequate
18 to protect public health and safety, and compatible
19 with NRC regulations.

20 Topic of low-level waste disposal,
21 eventually, includes the topic of compacts. Although,
22 Agreement States can be members of compacts, let me
23 draw a few important distinctions between the two.
24 The constitution allows a state to enter into a
25 compact with another state, but only with the consent

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1 of Congress. Congressional consent allows compacts to
2 assume powers normally attributed to Congress, but
3 only as explicitly authorized under the compact. The
4 Low-Level radioactive Policy Amendments Act of 1985
5 authorizes states to enter into compacts to establish
6 and operate regional low-level waste disposal sites.
7 These compacts authorize the limit access to compact
8 disposal facilities to compact states. The compact
9 can limit disposal of low-level waste to compact
10 sites, but they do not regulate matters of health and
11 safety. These responsibilities stay with the NRC, and
12 the Agreement States.

13 Regardless of the low-level waste disposal
14 site's compact status, the Agreement State will
15 license and inspect any low-level waste sites in its
16 jurisdiction to insure compliance with health and
17 safety regulations. The Agreement States performs
18 their activities, again, with regulations that are
19 compatible with the NRC's.

20 Key elements that make up an Agreement
21 State program can be summarized in four broad areas.
22 These areas also serve as the basis for the review of
23 a prospective Agreement State. There has to be a
24 licensing inspection, and incident response program
25 designed to adequately protect public health and

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1 safety, and compatibility with NRC regs, a program
2 that has sufficient staff and technical training to
3 regulate the licensees under their jurisdiction.
4 Although, the NRC does pay for the technical training
5 of the inspection license reviewers, the state may
6 need to hire individuals with more specialized
7 disciplines, if they're regulating areas, such as
8 sealed source and device low-level waste, or uranium
9 recovery.

10 With the exception of NRC money for
11 training, the states have to fund their own program.
12 This is usually done with user fees, and for most
13 states, some allocation from the general fund. And to
14 meet the compatibility with NRC regulations, each
15 Agreement State needs enabling statutes, and
16 regulations consistent with their state's
17 administrative laws and statutes.

18 As you can see from this map, Agreement
19 States play a prominent role in the regulation of
20 radioactive material in the United States. There are
21 36 Agreement States which regulate approximately 85
22 percent of the 22,400 licensees in the country. New
23 Jersey will become the 37th Agreement State at the end
24 of the month.

25 As already been mentioned, the four

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1 licensed waste sites in the country are all in
2 Agreement States. The major waste processors in the
3 country are also regulated by Agreement States. And
4 if you notice, the map does not have a Region II.
5 Region II still exists, but the reason it's not on
6 there is, the Region II office is not involved with
7 the oversight of radioactive material in the Agreement
8 State program. The Region II office oversees
9 reactors, and fuel cycle facilities. So, this is -- we
10 don't have a new -- something didn't happen in the
11 last week with the NRC.

12 As I discussed earlier, Congress requires
13 the NRC to maintain oversight of the Agreement States.

14 This is achieved through the Integrated Materials
15 Performance Evaluation Program, or IMPEP. The IMPEP
16 program is not only used to review Agreement States,
17 but it's also to review the NRC's Regional Materials
18 Programs, and the sealed source and device program
19 based in headquarters. IMPEP reviews are performance-
20 based risk-informed reviews. The reviews do not look
21 at all activities, or all actions taken by the program
22 during the review period, but focus on those that have
23 particular health and safety significance. If an
24 Agreement State performance is lacking in a particular
25 area, the review will examine that aspect of the

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1 program in more detail to determine the root cause of
2 the performance problem.

3 IMPEP reviews are performed at least every
4 four years, with a team of three to eight individuals,
5 NRC and Agreement State technical staff. The on-site
6 review is normally completed in a week, but may also
7 include additional review time. The team will
8 accompany the State or NRC inspectors during the
9 review. This is usually done before the IMPEP review
10 on-site. The team will look at five common
11 performance indicators for the state or regional
12 program. These include incidents, incident allegation
13 programs, licensing, inspections. They also look, for
14 Agreement States they'll look at compatibility, and if
15 the Agreement State has that low-level waste program,
16 or uranium recovery program, or sealed source and
17 device, they'll look at that, also.

18 The team report is reviewed by senior NRC
19 Management, and an Agreement State Program Director
20 before the report and its findings are finalized.
21 This matching review board is conducted at the public
22 meeting held about two and a half months after the
23 completion of the on-site review. The final report
24 includes a determination of adequacy and compatibility
25 for the program.

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1 The performance criteria used for an IMPEP
2 review is detailed in Management Directive 5.6.
3 Management Directives contain the policy and
4 procedures that govern internal NRC functions
5 necessary for the Agency to accomplish its regulatory
6 mission. The IMPEP program also has a number of
7 implementing procedures issued by FSME, which are
8 designed to provide specific guidance to the team on
9 individual indicators, including low-level waste
10 disposal.

11 So with all that set up, so, what is
12 compatibility, and how does it relate to our
13 discussion at this workshop? As I mentioned earlier,
14 Section 274 of the Atomic Energy Act requires that the
15 NRC insure that an orderly regulatory pattern between
16 the 36 Agreement States and the NRC be maintained with
17 the NRC regulations serving as the benchmark for the
18 compatibility requirements. This requires that the
19 Agreement State regulations contain no gaps,
20 conflicts, or duplications with the NRC regulations.

21 Compatibility does not mean that
22 everyone's regulations are the same. It was the
23 intent of Congress to allow Agreement States to have
24 some flexibility to regulate radioactive material
25 under their jurisdiction to accommodate local and

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1 regional concerns. Compatibility not only relates to
2 regulations, but also to legally binding requirements,
3 such as license conditions, and program elements, such
4 as implementing procedures. The process that NRC
5 uses to determine compatibility of regulations,
6 legally binding requirements, and program elements are
7 detailed in Management Directive 5.9.

8 So, how do we apply this concept? In
9 Management Directive 5.9, there is an evaluation
10 process to determine the compatibility category for
11 each section, or even subsection of the NRC
12 regulations that are required for Agreement State
13 compatibility. It is not uncommon for the subsections
14 of a particular regulation to have different
15 compatibility terminations. The six compatibility
16 categories that are in the Management Directive can be
17 divided in three broad groups.

18 For Categories A and B, the Agreement
19 State regulations must be essentially identical to the
20 NRC's. This means, essentially, word-for-word. The
21 basis for each category is different, but the result
22 is the same. An example of a regulation that's
23 Category A would be the basic dose limit of 5 rem per
24 year in Part 20. An example of Category B would be
25 the transportation regulations in Part 71. For

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1 Category C, the Agreement State regulations must
2 contain the essential objective of a section or
3 subsection of the regulation. For compatibility
4 health and safety, the regulations must embody the
5 essential objectives for health and safety. For these
6 two compatibility categories, the Agreement States can
7 be more restrictive to the NRC.

8 Let me give you an example to illustrate
9 what we mean by Compatibility B, and how we work it.
10 I'll use the example of a radiation survey. The NRC
11 regulation may specify how that survey is done, and
12 how frequently it should be done. To meet the
13 essential objective, the Agreement State regulation
14 must also require the performance of a radiation
15 survey, but the Agreement State may choose to require
16 this survey to be done in a different manner, or at
17 different, more frequent interval. This is
18 acceptable, and the NRC will conclude that the state
19 is compatible with regard to that requirement.

20 The last two categories, Category D is not
21 required for compatibility, but the states may choose
22 to adopt this particular section of the regulation.
23 And Compatibility NRC cannot be adopted by the
24 Agreement States, since the authority has not been
25 transferred to the state. An example of Compatibility

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1 NRC would be the review and approval of Type E
2 shipping containers, which are detailed in Part 71.

3 Here are some examples of compatibility
4 categories for different subsections of Part 61. As
5 you can see, the Agreement States are required to have
6 essentially identical regulations for Subsection 41
7 and 55, and have some flexibility to impose more
8 restrictive requirements in 61.56.

9 During this workshop, we've had discussion
10 regarding the proposed inclusion of a waste
11 classification specific to depleted uranium. If the
12 NRC proposed such a new classification under 61.55,
13 the compatibility category proposed by the NRC would,
14 in all likelihood, be the same as the current
15 regulation, or Category B. If the final rule
16 designates the new compatibility category as B, the
17 Agreement State is required to have the same waste
18 classification as the NRC. Again, something that
19 essentially looks word-for-word as ours.

20 How does a performance assessment fit into
21 compatibility? How the Agreement State performs or
22 reviews the performance assessment will be part of the
23 Agreement State's implementing procedures. The
24 Agreement State's implementing procedures are part of
25 what I referred to earlier as program elements.

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1 Agreement State's implementing procedures for low-
2 level waste are Compatibility Category C. And if a
3 new Agreement State has to adopt essentially identical
4 regulations for the DU classification, as I speculated
5 earlier, how is the public going to get input into
6 this process?

7 Yesterday, Andy provided an overview of
8 the rulemaking process. The figure here is essentially
9 the same, but it's been changed a little bit to
10 emphasize compatibility. The rulemaking working group
11 makes the initial compatibility determination. During
12 the internal review process, the proposed rule
13 compatibility determinations are reviewed by a
14 compatibility committee, consisting of NRC and
15 Agreement State staff, to insure consistent
16 application of Management Directive 5.9, the
17 implementation of the rule.

18 After the public comments are reviewed and
19 evaluated, NRC Staff prepares the final rule with
20 compatibility determinations. Before the final rule
21 is published, the Commission will review the rule, and
22 its compatibility designation. And the Commission has
23 the final say on the rule's compatibility. The States
24 normally have three years after the date the NRC
25 implements the final rule to adopt compatible

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1 regulations according with their own rulemaking
2 process. Occasionally, the Commission has required a
3 shorter time period for Agreement States to adopt
4 compatible regulations.

5 As you can see from the figure, once the
6 NRC adopts the rule as final, an Agreement State has
7 to adopt the rules, the opportunity to effect the
8 compatibility of the rule has passed. The opportunity
9 for public input into the compatibility designation is
10 during the NRC rulemaking process, before the final
11 rule is approved.

12 The NRC reviews all drafts and the final
13 version of all Agreement State regulations to insure
14 that they are compatible with NRC regulations. This
15 process is also applicable to proposed State statute
16 changes that impact the Agreement State program.

17 In addition to review by the NRC Technical
18 Staff, the NRC's Office of General Counsel also
19 reviews each draft and final rule. The NRC Staff
20 prepares a written response to the Agreement State
21 that is reviewed and signed by NRC Management, and the
22 review of all the regulations are tracked, and they
23 are all publicly available on FSME's public website.
24 So, the compatibility process, as well as IMPEP and
25 the rest of the policy and procedures that govern

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1 Agreement State programs are publicly available on the
2 public website. The FSME public website is linked to
3 the main NRC website, which, as everyone know, is
4 NRC.gov. The Management Directives I mentioned can
5 also be found on the public website.

6 Of interest is the regulation toolbox,
7 which has a complete breakdown of all NRC regulations
8 required for Agreement State compatibility, and if you
9 print them out, you're going to print 180 pages of
10 information.

11 With that, thank you for your attention,
12 and I'll be happy to answer questions.

13 MR. CAMERON: Okay. We're going to have
14 questions and discussion around the table, and then we
15 will go out to the audience for any questions or
16 comments that they have. Vanessa?

17 MS. PIERCE: Thank you. I would like to
18 have a little bit more clarification about this issue,
19 and I'm glad that we're talking about it, because we
20 recently have kind of butted our heads against the
21 compatibility issue, the rocky road of compatibility
22 with regard to depleted uranium disposal in Utah, came
23 up at the Radiation Control Board meeting that
24 happened the other day. And the way that the -- let
25 me just say our understanding, and then I'd like to

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1 express the understanding that I kind of received from
2 hearing NRC yesterday, and then I'd like your
3 clarification on the whole kit and caboodle.

4 Our understanding is that, as an Agreement
5 State, if we move to impose the more stringent
6 standards about waste disposal in order to protect the
7 health and safety of Utahns, and if there is a solid
8 fact-based decision for moving in that direction, that
9 that is part of the prerogative of an Agreement State.

10 The impression that we were given by the NRC's
11 presentation at the meeting the other day is that, if
12 an Agreement State imposes more stringent standards
13 for health and safety purposes, that is a problem for
14 the NRC. I believe that was the exact phrase, "That
15 is a problem." And that, ultimately, that could
16 jeopardize the state's Agreement State status. So,
17 I'd like a clarification on that, so that we
18 understand why the heck it is somebody would want to
19 be an Agreement State, if we can't protect our own
20 people.

21 MR. CAMERON: Okay. Duncan, are you going
22 to take that?

23 MR. WHITE: I'll take that.

24 MR. CAMERON: All right.

25 MR. WHITE: What we -- I was at the

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1 meeting on Tuesday afternoon. What we said in our
2 slide is, it depends on the basis of the moratorium or
3 ban, if it was a compatibility problem, or not. And
4 what we also outlined on that slide is what steps we
5 would take to look at such a moratorium, or ban. And,
6 you're right, the -- one of the important things we
7 said on that slide was the -- what the basis for that
8 is. And there might be some basis where that might be
9 not a compatibility problem, and there might be the
10 basis that there might be. Again, we cannot make that
11 determination until we see what is actually the final
12 ban, or how it's finally implemented and approved. We
13 don't know that.

14 As for the other part of your question
15 about how it impacts Agreement State compatibility.
16 Again, it depends on what the states put forward.
17 Again, we would certainly review, and provide some
18 sort of feedback on that. If there was a problem, we
19 would provide that feedback in writing back to the
20 Agreement State, and hope to work to get them to
21 achieve compatibility. But, to answer your question,
22 it depends on what the basis of the ban is. Again,
23 that's -- again, we didn't know. Again, the question
24 we -- again, we were asked by the Board was very
25 broad. Again, we didn't have any real specifics.

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1 MS. PIERCE: So, to clarify just a little
2 bit more, if the basis of that ban was to protect the
3 health and safety of Utahns, it seems that that would
4 be less problematic, than if the basis were some other
5 thing. My understanding is that if the basis is for
6 protection of public health and safety, that that is
7 kind of where the state has the advantage of passing
8 more stringent restrictions.

9 MR. WHITE: Yes. Again, potentially,
10 again, it depends on what the basis of the ban was.
11 Again, and now we use this -

12 MS. PIERCE: Can you give me some concrete
13 examples of what a basis might be?

14 MR. WHITE: I was just going to say that.
15 Let me give you, for example. Perhaps, there was a
16 performance assessment done at the site, and the
17 performance assessment which was tied to a dose limit,
18 that's part of the regulations, said they would only
19 restrict the amount of DU to come into the site to X
20 amount of material. And the decision of the Board may
21 have been we'll accept material up until we have this
22 much, and then we're going to have to -- we can't
23 accept any more, because we're going to exceed our
24 dose limit. That might be viewed as an acceptable
25 response.

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1 (Off mic comment.)

2 MR. CAMERON: Beatrice, you're going to
3 have to speak into the microphone, please.

4 MS. BRAILSFORD: And an example of an
5 unacceptable one?

6 MR. WHITE: It wasn't based on sort of
7 health and safety requirement.

8 MS. BRAILSFORD: But give us a scenario.

9 MR. WHITE: For example, say the Board
10 said we don't like DU, and we're not going to -- we
11 don't want to bring it in. That's a very extreme
12 example, but that's -- again, there's no basis for us
13 to -- and the reason I say that is that what that
14 would appear to do -- again, we'd have to see what the
15 exact wording is, and what it exactly says. But that
16 would that would produce a gap in this orderly
17 regulatory pattern I was talking about.

18 MS. BRAILSFORD: Okay. So, then describe
19 to me what happened in NRC when Utah, essentially,
20 decided not to accept B and C, not enviro -- or Energy
21 Solutions.

22 MR. WHITE: Well, my -

23 MS. BRAILSFORD: And a follow-on. Has --
24 do you have an example for real life of a state
25 trying to impose, based on health and safety, whether

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1 or not you thought it was legitimate, health and
2 safety considerations that the Nuclear Regulatory
3 Commission rejected that state's actions? That's
4 directed to -

5 MR. WHITE: Well, let me answer the first
6 part about the B and C waste. Again, if we use the
7 example of -- it can be Utah, or any state. If the
8 state -- if the practice of disposing B and C waste is
9 part of what we turn over to the state, the state
10 never receives an application, or request to determine
11 that, that's okay. There's no -- they're not stopping
12 anything, that's okay. No one has asked for -- they
13 don't have to give it out. Again, it depends on the
14 basis. If the B and C application was given to a
15 state, and they reject it for health and safety
16 reasons, say, for whatever the reasons, they did an
17 evaluation, they reject it on that basis, that might
18 be a very legitimate acceptable response. Again, if
19 it was, again, say, rejected for purely political
20 reasons - again, maybe an extreme case - that would
21 probably be a compatibility issue.

22 MR. CAMERON: And before we go back to
23 Vanessa and Beatrice, and, of course, to Christopher,
24 Larry, do you want to add something to this? And, of
25 course, to the other side of the table, too. Go

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1 ahead, Larry Camper.

2 MR. CAMPER: Beatrice, during the Board
3 proceedings the other day, we had a slide that the
4 question that the Board had asked of us is, if the
5 State of Utah either banned, or placed a moratorium on
6 DU disposal within the state, what would NRC reaction
7 be? Would this action threaten Utah's inclusion as
8 one of the Agreement States? In the course of
9 answering that slide, our slide said, "This depends
10 upon the basis of the ban or moratorium. Utah should
11 provide NRC with any proposed changes. NRC staff
12 would make a determination regarding compatibility.
13 NRC would work with the state to resolve any issues
14 that affect compatibility of the Low-Level Waste
15 program." And then the last point in the slide was,
16 "This action could affect compatibility for this
17 specific area."

18 In the course of questions being rendered
19 by the Board, and in the flow of discussion, I was
20 asked with more specificity what that meant. And what
21 I said was that a moratorium based upon health and
22 safety concerns would almost certainly create
23 compatibility problems. As I explained, the problem
24 is if the Board had chosen to issue a moratorium to
25 ban a category of waste from being disposed in the

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1 State of Utah, that is otherwise authorized in federal
2 regulations for disposal, that could pose a
3 compatibility problem. That's because a federal
4 entity has preeminence in this case, and you would
5 butt up against that kind of problem.

6 I went on to say that that raises as many
7 questions, as it does answers. The compatibility
8 arrangement we have with the Agreement States is a
9 very complex process, and would have to be looked at
10 very carefully.

11 I was subsequently asked by a Board
12 member, would we pull the agreement from Utah if they
13 did that? My response was, pulling Agreement State
14 compatibility agreements is at the draconian end of
15 possibilities. That is not something we would readily
16 do. We would have to look at the issue, we would have
17 to confer with the state, and figure out what it all
18 meant in the final analysis. But that was the essence
19 of the communication that went on around this topic.
20 But it has to do with the idea that a category of
21 waste, call it DU, call it any waste stream that is
22 banned, that is otherwise authorized, there is a
23 federal set of regulations in place that indicates
24 that it's to protect public health and safety, that's
25 the compatibility problem. We would have to work our

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1 way through that.

2 MR. CAMERON: And we're going to come
3 back. Okay? Let's get other views on the table on
4 this, and then let's see what questions we have.

5 MS. BRAILSFORD: I did have a second half
6 of my question to Duncan.

7 MR. CAMERON: Oh, go ahead.

8 MS. BRAILSFORD: You know, I already
9 expressed it. Duncan, could you tell me if there's
10 ever -

11 MR. WHITE: Yes. You asked me about an
12 example of -- I can't think of any direct example, but
13 I can give you something of an -- a similar one, where
14 the NRC adopted regulations that required
15 compatibility determination, which mean the state,
16 essentially, had to have identical programs. In that
17 particular case, a number of states already had a
18 similar program in place that -- this involved the
19 registration of General Electric's devices, a much
20 broader registration General Electric's devices,
21 something they've been doing for 20-25 years. NRC
22 Commission decided that our rule should be
23 Compatibility B, which means the states would have had
24 to have regulations nearly identical to ours, so they
25 would have had to shrink -- no longer register the

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1 devices they felt was important locally. And what the
2 states decided to do in that case was they petitioned
3 the NRC, and we're in the process of -- we looked at
4 the petition, agreed with them, and we're in the
5 process of changing that rule.

6 MR. CAMERON: Okay. Do you want to add
7 something to that, Larry?

8 MR. CAMPER: I want to try to further
9 clarify Vanessa's question. Vanessa, depending upon
10 the level of compatibility that is assigned to a
11 regulation, or a subset part of a regulation. For
12 example, if something requires the most stringent
13 category of compatibility, for example, definitions.
14 It says that a state can't define something, a RAD, or
15 some other term differently. It's the same thing in
16 Massachusetts as it is in Utah, and so forth, and so
17 on. Another category says it has to be essentially
18 the same, it has to be at least as restrictive as. In
19 that case, a state may, in fact, impose a more
20 restrictive requirement. And, in many cases, states
21 have done that. That's not the issue here.

22 The issue is when a state, any state, any
23 Agreement State would ban an activity that is
24 otherwise authorized in the regulation that is found
25 to be suitable to protect public health and safety,

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1 that's the problem. In this case, it happens to be
2 banning the disposal of depleted uranium. But that
3 was the essence of the problem.

4 MR. CAMERON: Go ahead, Vanessa.

5 MS. PIERCE: Sure. And just quick
6 response to that, is that the intent, and maybe this
7 wasn't made explicitly clear, or maybe I'm parsing
8 words that matter to me, and not as much to the NRC,
9 but the intent of the Radiation Control Board was not
10 to ban, but moratorium means a temporary ban, to put a
11 hold on disposing of depleted uranium in Utah while
12 this rulemaking process is underway to insure that any
13 disposal of this material that has been identified by
14 your staff as problematic, and not fitting in, there
15 are health and safety concerns about DU disposal that
16 were identified in the SECY paper, to put a hold on
17 disposing of that while this rulemaking process was
18 underway; recognizing that health and safety was
19 identified by the NRC, itself.

20 MR. CAMPER: Yes, I do understand what the
21 moratorium, or the ban was intended to do. But the
22 fact of the matter is, had the Board passed the
23 moratorium, it would have banned this particular
24 category of waste from being disposed in this state
25 for some period of time. The essence of that outcome

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1 would have been the same, it would have been something
2 that we would have had to have looked at in
3 compatibility space.

4 And no one said that the NRC was going to
5 issue sanctions against the State of Utah. What was
6 said was, we would have to look at it, because it does
7 raise a compatibility problem. We have a very
8 interesting delicate, and important relationship with
9 the Agreement States, and compatibility issues are not
10 something that we take lightly. We would have had to
11 have communicated with the state about it, and we
12 would have had to have done it very quickly, because
13 there are shipments earmarked for disposal near-term,
14 which is why I said during the Board proceeding, we
15 would have to look at this very quickly.

16 Normally, as Duncan pointed out, the way
17 we examine compatibility issues is during a proposed
18 rulemaking. But in this case, it would depend upon
19 the action taken by the Board, and the basis for that
20 action, and the need for us to look at in near-term,
21 whatever looking at it means, because shipments are
22 imminent.

23 MR. CAMERON: Okay. I don't want to cut
24 this discussion off, because it's very important to
25 all of you, but I do want to draw it back to this

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1 particular rulemaking. In other words, what the NRC
2 is looking for is what compatibility category should
3 this be? And forget about all of the categories, but
4 perhaps what is the -- should the states have the
5 flexibility to establish more specific standards,
6 different standards? That's going to be the question
7 that is asked in this proposed rule.

8 Now, we know the Board did not, for the
9 time being, they did not declare a moratorium, but
10 there could be a situation in the future for Utah,
11 Washington, Texas, where the state regulatory agency
12 wanted to establish more stringent standards than the
13 NRC has. So, we need to address those particular
14 questions, I mean, because I think that that's a very
15 real situation that could happen.

16 Let's go to Christopher, and then let's go
17 down the line, and we're going to come back to Steve.
18 Go ahead, Christopher.

19 MR. THOMAS: Well, I just want to bring up
20 one particular thing that I've always, not always, but
21 I've been curious about for quite a while. And I
22 think it's good as an illustrative example, which is
23 that, as I understand it, the State of Utah rules
24 define Radium-226 in its classification tables, but
25 the NRC does not. And, so, I'm wondering how that --

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1 how did that play out when that happened? Because
2 I've actually been to the FSME website, and I was
3 trying to -- well, I didn't spend a ton of time there,
4 but I was trying to find anything on Radium-226. And
5 I would just love to hear how that came to be, did it
6 pose any compatibility problems, all that sort of
7 stuff.

8 MR. WHITE: Yes. There's actually a
9 pretty straightforward answer to that. Part 61 was
10 adopted 20-something years ago. At that time, NRC did
11 not have regulatory authority for NARM. We only got
12 that -- and radium. Only got that in 2005. And when
13 we got the authorization to regulate radium, we did
14 amend some of our regulations to include radium as
15 part of how we regulate byproduct material, and how we
16 oversee it. But I don't believe -- we did not change
17 Part 61.

18 With that in mind, you look at the State
19 of Utah, Utah has always had the authority to regulate
20 Radium-226. And, probably, what they did is, they
21 probably included that with their regulations when
22 they adopted Part 61. Again, at the time we would
23 have reviewed those regulations, we would have not
24 made a comment about the Radium-226, because that was
25 clearly under the state's jurisdiction. We did not

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1 have any authority at that time to say anything about
2 it, and we just -- whatever they decided where it
3 should go, that's where it went.

4 MR. THOMAS: Just a part -- I appreciate
5 that. I'm glad to know what that history is. And
6 just sort of a parting comment, I'm not willing to
7 admit that current NRC regulations specifically talk
8 about depleted uranium of this quantity. I think it's
9 entirely possible that federal regulations are silent
10 on large quantities of depleted uranium, because they
11 weren't in the underlying analysis. So, that puts
12 things into a different space, if you look at it from
13 that standpoint.

14 MR. CAMERON: Okay. Thank you,
15 Christopher.

16 MR. CAMPER: I understand why you would
17 say that. I think it's a very good point. What we
18 have to -- what we would have to cling to at the
19 moment, though, are two things. One, during the LES
20 proceeding, the Commission did indicate that it was
21 Class A waste for purposes of that proceeding. That's
22 a recent -

23 MR. THOMAS: Low-level waste, wasn't it?

24 MR. CAMPER: Class A, or low-level waste.
25 That's a position. The second one is, when this

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1 current rulemaking effort was initiated, the
2 Commission did not change the class of waste, and the
3 subject at hand was large quantities of depleted
4 uranium. So, at the moment, then because of that, it
5 remains Class A waste, and one could argue that the
6 issue of large quantities has been recently vented
7 with the Commission.

8 MR. CAMERON: Okay. Let's -

9 MR. CAMPER: In our SECY 08-0147.

10 MR. CAMERON: Let's get some other views
11 on this. And I think we're going to go to Marty, and
12 then Tom. Marty, Tom, Dan.

13 MR. LETOURNEAU: This is a different
14 issue, but what I wanted to try to understand a little
15 bit better is, how compatibility classifications are
16 assigned to the requirements. Is that done as part of
17 the rulemaking, is it part of Management Directive?
18 And can those classifications change over time? So,
19 for instance, if, as a result of this limited
20 rulemaking the Commission were to decide that here's
21 where we're going to put something about DU. And, oh,
22 gee, maybe I want to change the classification of that
23 requirement, how would that happen?

24 MR. WHITE: As I said during one of my
25 slides, the working group, or the people who write the

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1 draft rule, they take an initial shot at the
2 compatibility determination, and they will use
3 Management Directive 5.9 to do that. There's a group
4 of people who do reviews internally for compatibility
5 standpoint, and make sure it's consistent with 5.9,
6 and implementation issues.

7 Now, once the rule is -- the Commission
8 will vote on the final rule, and say that it's
9 compatibility is whatever it is, and that's what our
10 office would use to evaluate state regulations from
11 that point on. How that would change is the
12 Commission may decide to change -- at a later time
13 change that. Again, the Commission can only make that
14 change. The Staff can't arbitrarily say it should be
15 C now. They made a mistake, and it should be
16 something different. The rule has to be -- the
17 Commission has to make that -- has to direct Staff to
18 make that change. And that could be during -- most
19 likely during another rulemaking.

20 MR. LETOURNEAU: But could the Commission
21 make that change without going through rulemaking?

22 MR. WHITE: Normally, it's during a
23 proposed rule phase. Again, they'll get public input,
24 the public will have input on the rule, and they will
25 make the final determination.

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1 MR. CAMERON: Tom?

2 MR. MAGETTE: Thanks, Chip. I'd like to
3 go back to the question you posed regarding what we're
4 looking at in terms of this rulemaking action. Noting
5 that we don't have a proposed rulemaking on the table,
6 but, nonetheless, we do have an SRM, a Secretarial
7 Requirements Document that directed the Staff to
8 modify 10 CFR 61.55(a) to add a line, or lines
9 requiring the performance of a site-specific
10 performance assessment for the disposal of large
11 quantities of depleted uranium. I would suggest that
12 since 61.55 is a compatibility category B, that
13 there's simply nothing I can see that would
14 distinguish this addition to that portion of the
15 regulations. And that is one part that's not
16 disaggregated among multiple compatibility categories,
17 if you're just looking at that 61.55. Obviously, lots
18 of other parts of 61 are, as Duncan pointed out. But
19 that there's really no reason to say that this one new
20 part of 61.55 should be a different compatibility
21 category. I think there clearly are transboundary
22 impacts if you look at depleted uranium in the states
23 where the material is generated, and the states where
24 it potentially would be disposed. So, I think it is
25 appropriate that it be Compatibility Category B.

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1 MR. CAMERON: Okay. And, we're going to
2 go down the rest of the cards. We're going to hear
3 from the states, Texas, and Jablonski. We're going to
4 go back over to Steve. But just so everybody is clear
5 on what Tom is saying, Category B, Duncan, again,
6 means what?

7 MR. DUNCAN: It means there is direct
8 transboundary issues with this section, and it should
9 be at B. Again, it goes across -

10 MR. CAMERON: And what does it mean in
11 terms of what the state is allowed to do?

12 MR. DUNCAN: It means the state
13 regulations have to be essentially identical to the
14 NRC regulations.

15 MR. CAMERON: Okay. I just want to make
16 sure everybody understands that. Dan, go ahead.

17 MR. SHRUM: I'd like to also agree that I
18 think this needs to be a Category B. But I was
19 waiting for the opportunity to talk about unique waste
20 streams here, simply because I would like to bring up
21 a simple fact, and that is, John Greeves mentioned
22 that 61.58 on the alternative requirements for waste
23 that can come in, and be evaluated, and do a site-
24 specific analysis. That has not been adopted by the
25 State of Utah. And if we are going to come up with a

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1 definition of unique waste stream, if we're going to
2 try to tie it into 61.58, somehow, if all those things
3 happen, I would like you to consider including that as
4 a Category -- or something that the State of Utah
5 could, or should, adopt.

6 MR. CAMERON: Okay. Larry?

7 MR. CAMPER: Two points. Regarding 61.58,
8 we talked about this in the SECY. The Staff amongst
9 our initial considerations about how to address this
10 issue, was to look at the alternate waste
11 classification possibilities espoused in 61.58. Based
12 upon discussions with the Office of General Counsel,
13 we were advised that 61.58 could not be used as a
14 means of solving this particular issue, because 61.58
15 is designed to be a by-exception provision. And if we
16 were going to impose a new requirement, that being a
17 site-specific performance assessment, that 61.58 would
18 not be a viable pathway to do that. That's point
19 number one.

20 Point number two, I think it's very
21 important, and I think Tom really just put at the
22 doorstep of the panel the essence of the question.
23 The proposed rule will contain a category of
24 compatibility. The question that we're asking the
25 panel is, what does the panel think that level of

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1 compatibility should be? For example, Duncan just
2 said it would be a B, which means it has to be
3 identical. That would mean, as a practical matter,
4 the state would be required to conduct a site-specific
5 performance assessment. The state would be required
6 to evaluate those technical parameters that we
7 identify in the regulation. For example, for sake of
8 discussion, period of performance, intruder analysis,
9 receptors, and other things that would be expected,
10 and required to be reviewed. And then there would be
11 guidance to help the applicant, or the state, in
12 conducting that type of performance assessment.

13 Now, Duncan, if the state wanted to impose
14 -- have the flexibility to impose additional
15 parameters to be evaluated beyond that which we
16 specify in our regulation, what category of
17 compatibility would, necessarily, have to be assigned?

18 MR. WHITE: Most often when there is a --
19 when the regulation lays out certain areas that
20 should be looked at in doing an evaluation, or
21 assessment, often those are either listed as usually
22 category health and safety. Sometimes, they're C. It
23 depends. Again, that gives the state flexibility to
24 say look at their unique situation, because they have
25 a specific type of site. They say we also should look

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1 at this other factor, too, this is important to this
2 site, for example. And then, frankly, there might be
3 something there in that list that NRC provides that
4 may not be important to the state, may not need to
5 focus on that.

6 MR. CAMERON: Okay. Thank you. And, Dan,
7 just your last point.

8 MR. SHRUM: Yes. Larry, I was not
9 intending to suggest that disposal of large volumes of
10 DU was supposed to be a 61.58 issue, so that's not
11 what my intent was. It was, in my mind, I have
12 separated disposal of large volumes of DU, and this
13 unique waste streams that we haven't been able to get
14 our hands around to-date, based off the discussion
15 here, that if we are to define unique waste streams,
16 that we, in the State of Utah, we don't have a way to
17 use 61.58 to analyze a unique waste stream. That if
18 we do define a unique waste stream that may be able to
19 use a performance assessment, or a risk-informed way
20 to receive and dispose of, that that be considered
21 Compatibility B.

22 MR. CAMERON: And this is if the unique
23 waste stream is defined.

24 MR. SHRUM: If it is decided to be
25 defined, then we don't have that -- and I'm not asking

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1 for 61.58 to be adopted. I'm saying if unique waste
2 streams are adopted, then let's consider that as a
3 higher category. And I thought that fit in here okay.

4 MR. CAMERON: And I think that that's
5 clear. Thank you, Dan. We're going to go to Steve,
6 to Susan, over to Steve Nelson, and back to Marty.
7 Steve Cowne.

8 MR. COWNE: Sure, thank you. I've got a
9 short couple of things I just wanted to say to Duncan
10 and Larry, but I wanted, number one, to support the
11 NRC's position on federal preeminence. And I'd like
12 to also encourage you to, in the future as you go
13 forward, to insure that any deviations from
14 compatibility are based on sound engineering judgment,
15 and do not impact the ability to implement a valid
16 license.

17 And then, Larry, to sort of support you a
18 little bit on the LES proceedings, I do believe that
19 the LES proceedings, and the Commission took into
20 account large quantities of depleted uranium. LES'
21 production facility, obviously, will produce over
22 200,000 tons of depleted uranium, Hexafluoride, and
23 the staff was well aware of that. So, I think that's
24 been taken into account.

25 MR. CAMERON: Okay. Thank you, Steve.

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1 Susan?

2 MS. JABLONSKI: I guess there's a couple
3 of things, and from a state perspective, and having
4 some rules that aren't, necessarily -- we don't know
5 if they will be consistent with what the NRC is
6 contemplating at this point. I don't know if it's a
7 straightforward answer, at least from us, or whether
8 it's one rating, depending on the breadth of what this
9 rulemaking does. If you look at 61.55, its
10 definitional things, it's what categories waste are
11 put in. When you start going to the measure of what
12 requirements for performance assessment, those are two
13 -- there's a lot more flexibility of the state. And
14 we're using that flexibility right now to do things
15 that, if that was limited, it would change what we've
16 done across the board in performance assessment, and
17 it could pose problems for us. So, I think it depends
18 on the breadth of what this rule looks like. It might
19 not be a one-size-fits-all for compatibility rating.
20 And we, too, we do not have the 61.58 in Texas,
21 either. It's an optional requirement. We didn't
22 adopt it, but we do have other additional requirements
23 that we chose to implement in areas where we have
24 flexibility under the rule. So, that's the caution
25 that I have in that, that it's not a straightforward

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1 answer.

2 MR. CAMERON: Yes. And I think that that
3 gives a lot of explanation to all of this. It also
4 emphasizes the importance of the working group that
5 the NRC puts together with the states to work on this,
6 because you're all going to be looking at this rule,
7 and you're going to be seeing where it differs from
8 yours, and you're going to making arguments about
9 well, this is what it should be, not only
10 substantively in a rule, but what the compatibility
11 categories should be.

12 MS. JABLONSKI: Correct. I have a
13 question for Steve, based on his comments that he --

14 MR. CAMERON: Steve Cowne? Okay.

15 MS. JABLONSKI: I wasn't sure what you
16 were directing that at, but it should be based on
17 sound engineering. Are you addressing when the states
18 exercise their ability to have a different
19 compatibility, and make choices? Is that what your
20 comment was about?

21 MR. COWNE: No, what I was -- not,
22 necessarily. What I was talking about is if the
23 state, or some entity, is proposing to have a
24 regulation, or a standard, that is different than the
25 federal regulation, you can call it more stringent, if

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1 you want to, but if the basis for that is not based on
2 sound engineering judgment, rather than emotion, or
3 something like that, or fear, then it shouldn't be
4 considered.

5 MS. JABLONSKI: I think I need to address
6 that, because we have our own rulemaking process in
7 the state, and if it's not a matter of compatibility,
8 and we're implementing the state policy via
9 legislation, or something else, we don't necessarily
10 have an engineering standard associated with all of
11 the rules that don't have compatibility ratings. We
12 have no requirement to do that, so that's about state
13 rights to have requirements for those states. So, the
14 NRC can, and sometimes does, give advice in these
15 areas when they get comments. But I know my own
16 state, sometimes we say thank you for your advice, but
17 we're going to follow what our legislature has told us
18 to do.

19 MR. CAMERON: Okay. Thank you, Susan.
20 We're going to hear from another state soon. Steve?

21 MR. NELSON: I'm going to spend some
22 emotional capital here.

23 Uranium, a moratorium on depleted uranium
24 is based on sound science. It's based on the
25 acceptance of material that the high surface area that

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1 becomes increasingly radioactive over a period of a
2 million years. Having said that, I appreciate Mr.
3 Camper's honest response to an honest question about
4 the way in which you responded at Tuesday's meeting.
5 I chose not to attend that meeting. That was a
6 conscious choice. I didn't have any classes to teach
7 that day, and I certainly could have gone, had I chose
8 to. But I'm going to give you my reaction, because in
9 the Agreement State process, individuals at different
10 regulatory agencies have to interact with one another.

11 And, to be quite honest, your statement came across
12 to me as a veiled threat from Big Brother. And had I
13 been on the Board, and been on the fence, that would
14 have pushed me to vote for the moratorium.

15 MR. CAMERON: Okay. Larry, do you really
16 want to continue this?

17 MR. CAMPER: No, the answer is no, I
18 don't. But I'm going to repeat what I said, Steve.
19 There was no intended veiled threat. The Board asked
20 us a question. This is a legal issue. The Board is
21 entitled to a thorough and precise answer, and we
22 would have been remiss if we had not raised the fact
23 that it may raise compatibility problems, purely a
24 legal issue. I'm not -- no one is calling into
25 question the basis of the science, or the intent of

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1 the moratorium. It came down to a purely legal issue.

2 We owed the Board an accurate answer.

3 MR. NELSON: And, like I said, you gave an
4 honest response to an honest question. But I'm
5 telling you what my reaction is.

6 MR. CAMERON: Okay. I think we're going
7 to try to go back somewhere, other than this. But
8 let's go to Marty, and Scott, and, I'm sorry, Chris, I
9 know you've been waiting.

10 MR. LETOURNEAU: Don't go away, Larry.

11 MR. CAMERON: Okay, Marty.

12 MR. LETOURNEAU: I am not playing beat up
13 on Larry here, but when you were talking about your
14 hypothetical situation, or quasi-hypothetical about
15 the requirements going to the state, you made a
16 statement that I wanted to make sure that I either
17 misunderstood, or maybe you want clarified. I thought
18 I heard you say that the state would be required to
19 prepare the performance assessment. And I think what
20 you probably meant was the state would be required to
21 require the facility -

22 MR. CAMPER: I'm sorry. In this case, the
23 states would be required to -- their requirements
24 would then require that a site-specific performance
25 assessment be developed, that would be developed by

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1 the licensee. You're correct. The state would be
2 required to insure that one is required. Obviously,
3 it's incumbent upon them to review it, and the
4 technical parameters that would have to be evaluated
5 would be the same, because of the level of
6 compatibility assigned to it.

7 MR. LETOURNEAU: I thought that's what you
8 meant. I just wanted to make sure there wasn't some
9 bizarre nuance of this that I had missed up to this
10 point.

11 MR. CAMPER: No. Thank you for that
12 clarification.

13 MR. CAMERON: Okay. And thank you, Marty.
14 We're going to Scott, over to Chris, and then we're
15 going to go Drew. Scott?

16 MR. KIRK: I'm still confused about the
17 compatibility requirements, and how they apply to
18 depleted uranium. If depleted uranium is Class A
19 waste today, even based upon the Commission's
20 directive, as it has been, what I heard is, is that
21 states cannot impose restrictions, or limitations, for
22 disposing of those waste materials if they've been
23 assessed. I mean, is that true or false?

24 MR. CAMERON: Duncan, we're going to go to
25 Duncan.

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1 MR. WHITE: Well, what the states may --
2 you mean -- the states may choose to do is -- it's
3 so-called Class A waste, but, again, the state, for
4 example, has done a performance assessment for their
5 site and it says, you know, if we take X amount of
6 material -- more than X amount of material, DU at this
7 site, we're going to exceed the dose limit, then
8 that's a basis for them to maybe restrict the amount
9 of DU going into that site. That's a health and
10 safety-based evaluation.

11 MR. KIRK: No, I understand that, but if,
12 for example, the performance assessment indicated that
13 it did not, and that that waste was acceptable for
14 disposal at a Part 61 facility, I mean, is there a
15 restriction in which that waste could not be disposed
16 of? And, I guess, what I'm getting at, and I
17 understand states' rights, and I'm sensitive to it,
18 but it seems to me that we're also waiting for a
19 rulemaking. And there's this wait-and-see attitude,
20 does a licensee have to wait for a wait-and-see
21 attitude for a time period for the rule to be
22 proposed, if they've already demonstrated it's Class A
23 waste, and is suitable for shallow land disposal?

24 MR. CAMPER: Again, Scott, I think the
25 essence of your point gets at the fact that there was

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1 a very precise legal question on the table, and that
2 was banning, albeit, temporarily, albeit, permanently,
3 banning the disposal of a category of waste in an
4 Agreement State was the problem. Okay? And it would
5 have depended, as I said, upon the nature of the
6 moratorium, or ban, and the basis for the moratorium
7 and ban. And that could have posed compatibility
8 problems, as we enunciated during the Board meeting
9 when we had to look at that.

10 Now, what you're saying, you're getting
11 back to the notion, and the issue that, if a state has
12 done a performance assessment that determined that a
13 particular category of waste is suitable for disposal
14 there, as a practical matter, it should be able to be
15 disposed there, if I understand your point. Is that
16 right?

17 MR. KIRK: Yes, hypothetically. That's
18 correct.

19 MR. CAMPER: But that -- in the case of
20 Utah, a performance assessment has been done for the
21 disposal of depleted uranium, presumably, it's a
22 satisfactory performance assessment, but that wasn't
23 the question. The question was a very legal fine
24 line.

25 MR. CAMERON: Okay. I don't think that

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1 Scott -- I don't think that that was -- the question
2 really goes to something that we're going to talk
3 about when we get to Other Consideration, is what is
4 going to happen in the interim? What is a licensee's
5 expectation? So, I think we're going to hold that
6 issue, and we're going to come back to that very
7 thing, Scott.

8 MR. KIRK: I understand that. And, Larry,
9 I understand your answer, too.

10 MR. CAMERON: Okay. Let's go to Drew, and
11 Susan, and then back to Marty. Drew, State of
12 Washington.

13 MR. THATCHER: Thanks, Chip. I just
14 wanted to give, at least what I hear is the big
15 picture perspective, and then maybe the State of
16 Washington, or perhaps mine, if my boss finds out what
17 I said.

18 You know, I see, sometimes, a situation
19 where you've got, at least in the federal level, you
20 have to have the ability to do disposal of waste, and
21 what you can't have is a NIMBYism that happens at the
22 state level. At the same time, you know, Greg's
23 brought up, I'm sorry, Steve brought up a very good
24 point, that if you have a technical basis for
25 excluding something, then you've got a good basis to

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1 move forward on something, but it has to be -- it
2 can't be a situation where the state, as in my case,
3 very much doesn't like radioactive waste, and would
4 rather not have any, at all. So, you have to prevent
5 that kind of situation, where it's not a sound
6 technical basis from driving decision. And I
7 completely agree with that.

8 MR. CAMERON: Okay. Thanks, Drew. And
9 just let me get -- Chris has been waiting for a while.
10 Why don't you go ahead, and then we'll go to Susan,
11 and Marty, and Christopher. Go ahead.

12 MR. MCKENNEY: Okay. I was going to be
13 bringing this back to what we have been discussing.
14 And over the past couple of days, we talked about a
15 different -- actually, when we talk about rule versus
16 guidance, we've talked about a number of possible
17 different lines, or features, or criteria possible in
18 the rules. Not all of them may be co-located in
19 61.55. So, I was just going to go through to keep
20 people's mind up on some of those that we talked
21 about, and how they might change in this
22 classification, which is what we are sort of asking
23 about.

24 One is the basic one, which came sort out
25 of the SRM, which is, we'll have to put it someplace,

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1 which is that strengthening the discussion and need
2 for a performance assessment. And what are aspects of
3 that performance assessment, such as, the degree you
4 need to have evaluated all the future events and
5 processes at your site for the time periods that you
6 are going to be analyzing for. You are having to
7 assess safety. Do you want to have that at a
8 different category? Would people want that at a
9 different category classification than just the need
10 to have a performance assessment criteria?

11 We've also talked about possibly modifying
12 the limits, or adding a limit for intruder dose
13 analyses in 61.42. And then that would probably be in
14 our basic system, in the first place, would be that
15 would go A, just because all base limits go -

16 (Off mic comment.)

17 MR. MCKENNEY: I'm sorry. If we added a
18 dose limit to the intruder protection standard in the
19 performance objectives, 61.41, 42, 43, and 44, are all
20 currently A. Everybody -- every states' laws have to
21 read essentially identical. So, therefore, if we
22 modified that section, and added anything to it, or
23 even reworded it, it would probably be likely that
24 that would have to stay A, just from its being sort of
25 the foundation of the framework of this process.

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1 Period of performance is one that we
2 talked about quite a bit, and how that could -- we
3 need period of performance in there. Whether that is
4 B, or A, or, basically, essentially identical -- do
5 people want it essentially identical that says thou
6 shalt do analyses for X amount of time, and everybody
7 has that in it, or would it be better to allow
8 flexibility on the state level to do it under the
9 public -- the health and safety level of the
10 compatibility level, which allows the state to have
11 essentially the same, but they can also be more
12 restrictive. In other words, in a period of
13 performance, it would mean that you allow longer time
14 periods, probably, to be analyzing, to be able to be -
15 - essentially meet ours, but then go more restrictive.

16 Those are sort of the things that -- trying to take
17 it back to those things that we've been trying to get
18 into, what is the rules, what -- for us, going
19 forward, what are the views on how people might want
20 to parse out what we've been discussing the last
21 couple of days, of possible things to go into the
22 rulemaking.

23 MR. CAMERON: Okay. That's sort of a
24 preview of what you're going to see in the proposed
25 rule. Duncan wants to add to that. Then we're going

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1 to go and take these three cards, and I'm going to see
2 if anybody in the audience has a comment on this.
3 Duncan, adding to the preview that Chris just gave,
4 what did you want to add?

5 MR. WHITE: Yes. One of the beauties of
6 compatibility is just when you have it all figured
7 out, there are some curve balls. I think Chris is
8 basically right. Almost all our dose limits are
9 Category A. There is one that's Category C, and
10 that's the License Termination Rule. The License
11 Termination Rule, and the NRC regulations requires
12 clean-up to 25 millirem, but it is Compatibility C,
13 and some states, a number of states have clean-up
14 levels that are less than 25. Again, the Commission
15 made the decision. Again, the way the Commission
16 looked at that, there was no transboundary issues.
17 This is totally within the state's borders.

18 MR. CAMERON: So, what exactly is a basic
19 standard may be up for grabs. Okay. Adding to the
20 certainty of this whole process. Susan, go ahead.

21 MS. JABLONSKI: I'll try to be brief, with
22 a couple of clarifications from an Agreement State.
23 And I heard Chris say some of these things.
24 Submission of a performance assessment is not the bar
25 for being able to deliver the material that you want

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1 to deliver. That is the piece of it that gets the
2 review running, but that's not the bar, the
3 submission.

4 In our state, in the absence of the rules,
5 the very things that we're talking about here, we had
6 the discussion on period of performance. We had, in
7 our rule, peak dose. Those rules were judged
8 compatible by the NRC. They're in our state active
9 today, and we are going to apply them. So, the idea
10 that we would stop doing that in the interim is just
11 not even an option. It's a rulemaking that went
12 through extensive public comment, in an area that was
13 not part of NRC compatibility. We asked the NRC
14 specifically, because we knew when we were doing this,
15 we asked them for input, and the concepts peak dose,
16 and period of performance. And we received some. So,
17 at this point, we have done everything that we can as
18 a state to try to get in front of an issue that's
19 currently under discussion. And we would really hate
20 to have to roll any of that back after the effort that
21 we spent trying to get in front of an issue.

22 MR. CAMERON: Okay. Very instructive.
23 Thank you, Susan. Marty, and then we'll go to
24 Christopher.

25 MR. LETOURNEAU: I'm going to pass. We're

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1 back on the agenda, and I don't want to get us off it.

2 MR. CAMERON: Okay. And let's hear from
3 Christopher, and then let's go out to the audience on
4 that. Christopher?

5 MR. THOMAS: Quick clarification question.
6 Currently, in the review of an Agreement State from
7 the NRC's perspective, do you look at any of the
8 licensee's current existing performance assessments?
9 Do you evaluate those in any way?

10 MR. WHITE: I can answer that one. During
11 an IMPEP review, we would -- normally, during the
12 period of review, which is usually a four-year period
13 since the last review, if, for example, there was a
14 licensing action taken involving a performance
15 assessment as part, that we would probably look at it.

16 MR. THOMAS: And then, is there like a
17 report done?

18 MR. WHITE: Oh, yes. There is -- the
19 IMPEP -- the whole IMPEP process, there is a final
20 report issued on that.

21 MR. THOMAS: And then a quick -- and I use
22 it as a comment, which is, there's this interesting
23 land ownership requirement, which has been an
24 interesting thing in Utah. And I'm curious, I don't
25 know what level of compatibility that's assigned, but

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1 I think that may be an open issue with depleted
2 uranium, because it is such a long-lived hazard, that
3 you may want to have a more -- we would argue for a
4 more stringent application of that, that the land be
5 owned by a -- in-fee, by the federal government, or a
6 state government.

7 Oh, and then I'll just tack on, this is a
8 little bit different, but I would argue that maybe the
9 requirement for a site-specific analysis be -- maybe
10 that be required in sort of an A, or a B level, but
11 then maybe some of the specific parameters could be
12 more -- could be health and safety. And, therefore, a
13 state could adopt the more stringent parameter. That
14 makes sense to me.

15 MR. CAMERON: Are you suggesting that the
16 site-specific performance assessment rulemaking should
17 include a requirement on land ownership?

18 MR. MCKENNEY: I think he's questioning
19 the fact that we do have a rule right now in Part 61
20 about land ownership. And he was asking about whether
21 that's in the compatibility areas, or not. I believe
22 it is, but I'm not aware of how the compatibility
23 review went for Utah.

24 MR. CAMERON: But you may want to -- if
25 it's not part of this particular rulemaking effort,

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1 we may want to talk to Christopher offline about it.

2 MR. McKENNEY: I can tell you what we just
3 did. We did have that sort of discussion with the
4 State of Texas just recently on that sort of -- as to
5 reviewing PAs during IMPEPs, I did do the IMPEP for
6 the State of Texas during the middle of their review.

7 There is no way I'm going to read 20,000 pages, and
8 do all the analyses in two days. If we did, we
9 wouldn't need 15-month review cycles.

10 MR. CAMERON: So, make it long.

11 MR. McKENNEY: Yes. Well, the process is,
12 is we go in and we start asking the staff what are
13 they looking at? And we're looking not -- we're not,
14 necessarily, in most of our review situations second-
15 guessing the state on individual items. We're asking,
16 are they following our process? Are they looking at
17 it from a technical standpoint, from that process,
18 which is a lot easier during the process, which I was
19 lucky to do during the middle of the process while
20 they were doing questioning, while they were setting
21 up RAIs; was, so, what are you looking at? How are
22 you comparing things? Are you doing independent
23 analyses? Are you doing -- I was able to ask the
24 individual staff members that, and try to go through
25 the whole process, and stuff, instead of going oh,

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1 they published it now, now we'll go in and say, do we
2 have problems or not? So, I can't say what was done
3 back when the IMPEPs were done in the mid-90s. I
4 cannot speak to that. But I can say that the process
5 we do to say, how much do we look over the PA itself
6 directly right now, is that we would be asking the
7 staff, themselves, how do they go about reviewing it,
8 and how did they go about making decisions in it? To
9 say that were they following a confident process, and
10 with their regulations.

11 MR. CAMERON: Okay. Thank you.

12 MR. THOMAS: The IMPEP review could have
13 caught some of these issues earlier with the DU, and
14 the fact that the analysis wasn't appropriate for that
15 material. Thank you.

16 MR. CAMERON: Okay. Audience? Yes,
17 ma'am. And could you just identify yourself for us,
18 please.

19 MS. GETTIS: I'm Claire Gettis, Citizen
20 Activist. I've had two organizations before, and
21 worked on this issue for quite a few years.

22 (Off mic comment.)

23 MS. GETTIS: I've worked on -- I've had
24 two organizations over the last 12 or 14 years, and
25 worked on this particular issue. And I've spent a lot

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1 of time dealing with Energy Solutions, and prior to
2 Enviro Care. I'm pretty astounded at the conversation
3 here. I thought that our end goal was to have safe
4 disposal. And when you have regulations that,
5 basically, lump categories together, because they just
6 happen to fall out of another category, seems, to put
7 it mildly, insane.

8 You have a facility out there that has
9 been engineered for 100 years, and now we're being
10 told that it's all right to bring something out there
11 that has a life of something 10,000, to a million? I
12 mean, this not in my backyard is nonsense. We're only
13 asking that we have correct engineering, background on
14 what we're doing, and when you make a rule like this,
15 and then you say oh, you bring that out, and put it
16 there, and then three years down the road, we'll find
17 out if it's okay. And you think the public is going
18 to fly for that?

19 The other thing I have to say is, you
20 talked a lot about the rules, and how we go making
21 these decisions. And my understanding was that the
22 federal government has -- the states should have
23 similar rules. Am I right?

24 (Off mic comment.)

25 MS. GETTIS: Okay. When this decision was

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1 made in Washington, I pretty much understand there
2 were a vote, and information was taken. There was
3 responses from the public. What I saw at the
4 Radiation Control Board the other day was, I saw
5 Energy Solutions come in the day before the meeting
6 and drop a letter on the desk of our head of DEQ. On
7 a phone call without anybody having any chance to
8 respond to this, she leads the Board into making a
9 decision to not have a moratorium; but, further, to
10 amend the license. Now, there was no process here
11 whatsoever.

12 As a citizen, what input do we have, and
13 do you expect any of us to have any kind of faith in
14 what you're doing? I mean, this seems -- to the
15 average person, they get it. Maybe we've been in a
16 room together too long. But I can't understand how in
17 any way, shape, or form you can send that kind of
18 waste to a facility that's engineered for 100 years.

19 MR. CAMERON: Okay. Once again, we did
20 have a general public comment session scheduled for
21 five this afternoon. We've taken an early comment.
22 Thank you, Claire. Does anybody have anything on this
23 particular issue? All right.

24 MS. LOCKHART: I'm Laura Lockhart. I'm
25 with the Utah Attorney General's office, and I'm a

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1 little puzzled about a difference that I'm hearing
2 between the compatibility program that Duncan is
3 describing, and the one that Larry's describing. And,
4 specifically, the one that Duncan is describing sounds
5 really like a one plus one equals two kind of thing,
6 either it is, or it isn't. It's in the rule. It's
7 pretty easy to figure out. The one I'm hearing Larry
8 describe is one that has some discretion in it. We'll
9 work with you. We'll look at the specific examples,
10 and things like that. And I'm not sure -- I think the
11 difference between what I'm hearing is probably
12 significant to helping us understand how the
13 compatibility program works. And I don't get it.

14 MR. CAMERON: This is an important
15 clarification, and I don't know whether -- Duncan, can
16 you try to clarify the discretion aspect that Larry
17 was describing, so that we can just give some
18 clarification.

19 MR. WHITE: I think I can.

20 MR. CAMERON: Good.

21 MR. WHITE: What we are talking about here
22 is, you know -- what we we're going to do with
23 regulations, if we add DU to 61.55, what the
24 compatibility would be for that. We were talking a
25 lot about that.

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1 One of the things that compatibility -- it
2 doesn't also cover regulation, it covers other things
3 that the state may do. And one of the things I
4 mentioned during my presentation was things like
5 program elements. And sometimes states do other --
6 take other actions that may affect compatibility.
7 Again, like a license condition, or something like
8 that. Again, we would look -- again, it may not fit
9 in a particular hole. It may not fit under this
10 section of the regulation. But the other thing we
11 also look at carefully is -- one of the important
12 aspects of compatibility is does it create a gap, is
13 it duplication? And that's what we kind of look at.
14 Again, if there's some action that is taken like that,
15 then we have to look at that. Again, that is very
16 specific on what's done. It's almost how it's
17 written. Again, how it's written could -- we could
18 say it is a compatibility issue, it is not a
19 compatibility issue, it depends on how it's written.

20 MR. CAMERON: Okay. Let's move on to the
21 next topic. And you may want to talk with Duncan and
22 Larry offline, if that does not -- if that did not
23 clear it up. Okay. Thank you.

24 Do you guys want to take a break now?
25 Okay. Let's take a break, be back in 15 minutes, but

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1 please come back.

2 (Whereupon, the above-entitled matter went
3 off the record at 2:33 p.m. and resumed at 2:51 p.m.)

4 MR. CAMERON: Okay, we knew that the NRC
5 knew that there would be interest in the so-called
6 long-term rulemaking that is to follow on after this
7 rulemaking, so Larry Camper of compatibility fame is
8 going to tee this one up for us and then we'll go for
9 discussion.

10 MR. CAMPER: Good afternoon, everyone.
11 Thank you for your perseverance and for still being
12 here. We appreciate that.

13 Yesterday, I did cite the fact that this
14 is a two-part process. And what I want to talk about
15 now is the second part of the process that the
16 Commission the staff to follow.

17 Again, I'm going to read prepared comments
18 because I want everyone here to hear the same things
19 that was said in Maryland a few weeks ago, so the
20 panel has the benefit of the exact same consideration
21 and the audience hears the same thing as well. So
22 bear with me as I read those words.

23 The second part of this rulemaking effort
24 is what we are calling the longer-term rulemaking. In
25 the staff requirements memorandum, the Commission says

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1 specifically they directed the staff to propose the
2 necessary resources for a comprehensive revision to
3 risk-informed, the 10 CFR Part 61 waste
4 classification framework, with conforming changes to
5 the regulations, as needed, using updated assumptions
6 and referencing the latest International Committee on
7 Radiation Protection methodology, the ICRP.

8 As part of this effort, staff will
9 identify any corollary or conforming legislative
10 changes necessary to support this rulemaking, if any,
11 as well as recommendations on how to proceed absent
12 that legislation being enacted and other agencies that
13 may be impacted by any changes.

14 This effort should explicitly address the
15 waste classification of depleted uranium.

16 In addition, this effort should include
17 the performance of a technical analysis for public
18 comment concerning the disposal in a near-surface
19 facility of any long-lived radionuclide, including
20 uranium. This analysis and the resulting comments
21 should inform the staff's eventual recommendation to
22 the Commission on an appropriate, generic requirement
23 addressing such disposal. This revision would likely
24 involve different, updated methodologies and
25 assumptions than the original Part 61 methodology for

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1 key variables such as disposal configurations,
2 performance periods, institutional control periods,
3 waste forms, site conditions, exposure pathways, and
4 receptor scenarios.

5 In terms of the long-term rulemaking, this
6 effort would explicitly address the waste
7 classification for DU, as I mentioned, and it would
8 reflect current knowledge of the performance of low-
9 level waste disposal facilities and would present
10 risk-informed concentration limits for all
11 radionuclides, not selectively for depleted uranium.
12 This revision would accurately represent our increased
13 understanding today, rather than relying upon the Part
14 61 analysis conducted approximately 30 years ago.

15 An update of the methodology used to
16 develop the concentration limits would result or could
17 result in higher or lower concentration limits than
18 the currently -- than those currently used, which
19 could actually increase or decrease disposal options
20 for some types of waste, for example, current class BC
21 waste which in some cases could become class A
22 waste or conversely for that matter.

23 In terms of the international front, it's
24 been mentioned several times over the last day and a
25 half, as part of the staff's evaluation, we will

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1 consider the international waste classification system
2 and see if it is applicable to our low-level waste
3 environment here in the United States.
4 Internationally, they have six different classes of
5 waste, five of those being for low-level waste, as
6 depicted here; there being exempt waste, very short-
7 lived waste, very low-level waste, low-level waste,
8 intermediate-level waste, and of course, high-level
9 waste.

10 Internationally, countries have also
11 stressed the role for a site-specific performance
12 assessment. The IAEA, that is, International Atomic
13 Energy Agency, has published as Safety Guide No. 111-
14 G-1.1 that is about to be updated from the 1994
15 edition. The updated version distinguishes between
16 LLW, low-level waste, and intermediate-level waste for
17 long-lived alpha emitters like Uranium-238. The Guide
18 says that national authorities should establish
19 limitations for the disposal of long-lived
20 radionuclides for near-surface disposal facilities
21 based on safety assessment of a particular disposal
22 facility.

23 The Guide also states that a very
24 definitive boundary between ILW, intermediate-level
25 waste and LLW, low-level waste, cannot be provided.

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1 Waste acceptance criteria for particular facilities
2 will be dependent upon the actual design of and
3 planning for a near-surface disposal facility, for
4 example, engineered barriers, duration of
5 institutional controls and site-specific factors.

6 It is important to note that overseas,
7 most countries have not disposed of significant
8 quantities of depleted uranium. According to a 2001
9 National Energy Agency report, management of depleted
10 uranium, all of the major nuclear fuel-producing
11 countries are storing depleted uranium with
12 expectations that an eventual use will be found for
13 it.

14 In the United States, NRC's policy is that
15 the generator can determine if there is a use for
16 their depleted uranium or when it, in fact, becomes
17 waste and if a generator determines it to be waste, it
18 is deemed to be low-level waste at this point in time.

19 As we proceed with this second phase of
20 this project, this longer-term rulemaking, we plan to
21 have additional workshops to collect the input from
22 the public at various stages along the way. And there
23 will be numerous opportunities to address both
24 technical and legal issues as we proceed with the
25 rulemaking.

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1 Because of the scope of this long-term
2 rulemaking, we assume that it will take a considerable
3 amount of time and we will afford many opportunities
4 for public comment along the way, such as public
5 workshops on various parts of the rulemaking as we
6 proceed ahead.

7 So that concludes my comments on the long-
8 term rulemaking and would address any questions or
9 clarification.

10 Thank you.

11 MR. CAMERON: Thank you, Larry. And if
12 you could join us down at the -- why don't you join us
13 at the table for this discussion. We've already heard
14 intonations on this particular issue from Dave Kocher,
15 from Vanessa, from Tom Magette, in terms of the
16 relationship between this initial rulemaking and what
17 might happen. So it's been teed up a lot.

18 Let's go to Beatrice, and then we'll go to
19 Vanessa, and then to Dave Kocher and then over to the
20 other side of the table.

21 Beatrice?

22 MS. BRAILSFORD: Thank you. Vanessa did
23 actually turn up her tent card first, but I have
24 always taken advantage of the alphabetical order of B
25 and V.

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1 So Larry, it is in the long-term
2 rulemaking that the NRC will explicitly address the
3 waste classification of depleted uranium?

4 MR. CAMPER: We will address all
5 radionuclides in the existing waste classification
6 scheme. The Commission also put language in the staff
7 requirements memorandum that explicitly called upon
8 the need to examine the classification of depleted
9 uranium. That's correct.

10 MS. BRAILSFORD: In the long-term
11 rulemaking?

12 MR. CAMPER: That's correct.

13 MS. PIERCE: One issue that I wanted to
14 raise here, and I'm not certain if this is the best
15 place to raise it, but I guess one thing that I would
16 suggest be considered for the long-term rulemaking is
17 something that I see as an inconsistency within the
18 NRC's own rules which is calling depleted uranium
19 Class A waste and then 10 CFR 61.7 subsection (b)(4)
20 which says "institutional control of access to the
21 site is required for up to 100 years. This permits
22 the disposal of Class A and Class B waste without
23 special provisions for intrusion protection since
24 these classes of waste contain types and quantities of
25 radioisotopes that will decay during the 100-year

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1 period and will present an acceptable hazard to an
2 intruder after that time."

3 And then it later goes on to say that
4 "waste that will not decay to levels which present an
5 acceptable hazard to an intruder within 100 years is
6 designated as Class C waste." I see a very important
7 contradiction between calling DU which is hazardous
8 for a million years and the typical definition of
9 Class A waste or the way that it's handled in that
10 section of the rule.

11 MR. CAMPER: I understand your point. I
12 think the challenge that the staff will face -- it's
13 interesting. When the Commission asks us to risk-
14 inform the waste classification scheme, you know, the
15 word risk-informing when uttered seem relatively
16 straight forward. However, what the staff is going to
17 try to do is to approach the assignment with an open
18 mind up to and including examining whether a different
19 waste classification scheme would be an appropriate
20 course of action as for example, the international
21 scheme which I cited.

22 So I won't sit here and pretend to
23 prejudge what the ultimate outcome will be or which
24 radionuclides will go from C to B or B to A. But I
25 will say this. I think your point is extremely well

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1 made in the following regard. It's one thing to
2 modify the waste classification scheme. There are
3 other parts of Part 61 that have a direct bearing upon
4 the waste classification scheme. And those will need
5 to be looked at and carefully examined as well. You
6 make a very good point.

7 MR. CAMERON: Okay, thank you, Vanessa.
8 Thank you, Larry.

9 Let's go to Dave and then we'll go to the
10 cards over there and then we'll come back to
11 Christopher.

12 MR. KOCHER: I have learned a heck of a
13 lot in the last day and a half and I really appreciate
14 the opportunity for this. It's increasingly clear
15 that DU really is a different beast in the following
16 way. I think everybody in this room would admit that
17 if DU were submitted to waste classification in the
18 same way that other stuff was 30 years ago, it's not
19 Class A waste.

20 Furthermore, if the same rules, the same
21 impacts analysis methodology were applied, it's pretty
22 clear to me that it would not be Class C waste either
23 because a key factor in defining Class C waste is that
24 the volumes had to be small and we are clearly not
25 dealing with small volumes of stuff. So earlier

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1 today, I took it as a somewhat facetious comment that
2 -- and I apologize if I misread it, that we needed to
3 call this Class Q, but I think that is a valid point.

4 DU simply doesn't fit into the waste classification
5 system as it's present constituted and as the numbers
6 in the tables were derived.

7 This is a different beast.

8 MR. CAMPER: I think your point is well
9 made. I think one of the driving principles in
10 requiring a site-specific performance assessment is to
11 ensure that you would achieve the same level of public
12 health and safety as if you were to call a waste a
13 particular class, whatever that class might be.

14 But having said that, having said that,
15 what that does do is address the immediate issue with
16 regards to disposal of depleted uranium. Now when you
17 start to look at the longer-term rule and you start to
18 risk-inform the waste classification scheme, the
19 Commission has asked, directed us to specifically look
20 at depleted uranium. You make very good points.

21 MR. KOCHER: By saying that it's a
22 different beast entirely doesn't imply that it can't
23 be handled. Let me be clear about that. But it's
24 clear in my thinking that it just doesn't fit into the
25 traditional Class A, Class C system for long-lived

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1 radionuclides.

2 The other point I want to make is a little
3 bit more general and I know the smart people at the
4 NRC are fully aware of this. As you undertake a
5 special interim rulemaking for DU only, you may or may
6 not set precedence which are a good thing for the
7 long-term, more general rulemaking and just sort of
8 keep this in mind as you proceed. You may do things
9 in regulating DU that may or may not be a good idea
10 and regulating other things, so try to be aware of the
11 connections with a possible long-term rulemaking as
12 you go forward with this.

13 MR. CAMERON: Thank you, David.

14 Scott, let's go to you and then we'll go
15 down the room.

16 MR. KIRK: I was speaking to Susan
17 Jablonski about this outside a little bit and what I
18 would encourage the NRC to do for the long-term
19 rulemaking is sort of take your lessons learned and
20 the frameworks you're developing for DU and see how
21 you can extend that for the new rulemaking for
22 revising Part 60.

23 And what I'm getting at is for DU it's
24 very long-lived, but there's other long-lived
25 radionuclides and if you developed a framework that

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1 has long performance periods such as peak dose or very
2 long time periods into the future, if you look at
3 requirements for intrusion barriers, whether it's
4 concrete canisters or additional intruders and
5 barriers, you know, if you address the issue about
6 radon and whether you want it to be all pathway
7 sumped, you're halfway there or probably much further
8 than that for many of the other radionuclides.

9 And when you start to consider that for
10 like change control provisions, unreviewed safety
11 questions and things like that, I think it might go a
12 long way for helping you think about how you're going
13 to be revising Part 61. And I would even say to go
14 back to the revisions -- or the inception of Part 61,
15 back in the '80s. That was developed to solve a
16 problem that existed back in the '60s and the '70s,
17 which don't exist today, but there's also other
18 challenges that are coming. There's new reactors
19 coming on line. There's a need for a national supply
20 of radioisotopes. The nuclear renaissance is coming
21 and so whatever you do, it needs to serve that
22 generation as well.

23 MR. CAMERON: Thank you.

24 MR. CAMPER: I appreciate the comment and
25 as you were saying that I was thinking back to a slide

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1 that Dave had in one of his presentations where he was
2 pointing out, you know, we have this 100 years of
3 institutional controls for low-level waste in Part 61.

4 But there are many radionuclides that continue decay
5 well beyond 100 years and in fact, experience some
6 sort of growth, end growth themselves along the way,
7 well out into the future.

8 So it's -- your point is well made.

9 MR. CAMERON: Okay, let's go to Marty.

10 MR. LETOURNEAU: I have to agree very much
11 with David. I thought that was very well said. And
12 it is sobering, but by the same token, I'd like to
13 think that if we turn the clock all the way back and
14 we were the ones that were sitting there writing the
15 EIS and we had DU on our plate that at that time we
16 might recognize how incredibly different it was and
17 that we might actually have subjected it to a
18 different type of analysis or a different set of
19 scenarios than the ones that we're used to develop the
20 rest of the classification system.

21 That being said, I want to go back to one
22 of the comments that Larry made because I think it's a
23 really important comment. We haven't really
24 emphasized it directly, so I want to touch on it.
25 It's something that Chris and I and David and others

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1 would know very well, but Larry said that there are
2 other things other than the classification system that
3 get effected and are important. And there's a
4 construct here that is captured in the IAEA framework
5 and it's reflected in our framework and the NRC's
6 regulatory regime reflects it too.

7 The performance assessment is not
8 everything. In the international parlance, it's a
9 safety assessment. They have the safety case and the
10 safety assessment. The safety assessment is what
11 we're talking about as a performance assessment. It's
12 the model and the calculations.

13 The safety case is -- or the performance
14 assessment or the safety assessment is part of the
15 safety case, but then the total safety case is all of
16 the other things that inform your decision making and
17 support your understanding that you can have a
18 reasonable expectation or a reasonable assurance that
19 the performance objectives are not going to be
20 exceeded. It includes institutional policies. It
21 includes multiple barriers, defense-in-depth, land use
22 policies, all sorts of other considerations that get
23 built into that.

24 So I just wanted to make sure that we
25 recognize that point that that's really what Larry was

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1 getting to, that it's not just the classification
2 system. It's not just the performance assessment.
3 There are a lot of other things that have to be taken
4 into consideration and do get taken into consideration
5 that are part of what is on the table when the
6 decision maker makes their decision and I just want to
7 make sure we don't forget that.

8 MR. CAMERON: Thank you, Marty. And Tom?

9 MR. MAGETTE: Thank you, Chip. I would
10 like to just start with a boilerplate statement that I
11 am definitely in favor of an updating and a risk-
12 informing of Part 61 that clearly does go beyond the
13 waste classification tables. I think it allows us to
14 correct the historical focus on a source of
15 radioactive waste as opposed to the potential impacts
16 and potential environmental effects and potential
17 effects on human health and safety which is where our
18 attention most appropriately belongs. It also allows
19 us to make some straightforward updates, science-based
20 updates based on advancements in our knowledge and our
21 understanding of fate and transport and of health
22 physics which have clearly changed since the time the
23 rule was put in place. Nothing wrong with what was
24 done then, it's just that we know a lot of things now.
25 I think it's very much ripe for review.

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1 I appreciate what David has said and Scott
2 and Marty. I think I would put a slightly different
3 spin on David's point. I think using the depleted
4 uranium as an example is a really good point for a
5 couple of reasons, one going to the nature of the
6 rulemaking. I see this as an opportunity for the NRC
7 to essentially lay the foundation and the groundwork
8 for the next rulemaking and having done this one
9 correctly will essentially have a framework for how to
10 look at the larger picture. And I would expand that
11 by saying it's not just depleted uranium that doesn't
12 fit the tables.

13 A lot of things don't fit the tables. The
14 tables don't capture all of the issues that we face in
15 trying to figure out what a suitable disposal path for
16 low-level radioactive waste is. So I think this gives
17 us the opportunity to correct some of those things. I
18 think I'd go a little bit beyond what David and Scott
19 said, although I certainly agree with them.

20 To Marty's point, I think the
21 international analogy is absolutely applicable here in
22 the United States. I echo what he said. It is not
23 just about a performance assessment or a risk
24 assessment or a technology analysis, depending on
25 which phrase, which part of the regs you look at, the

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1 phrases that have been used. This is also part of a
2 broader system that depends on siting. So you have a
3 geographical isolation from human populations or
4 sensitive portions of the environment, engineered
5 barriers which augment that, institutional controls,
6 as Marty mentioned. So there are a lot of things that
7 go into the decision making process and identifying
8 the proper way to dispose of low-level radioactive
9 waste.

10 I think there are a lot of good comments
11 that have been made. I think there is a way to look
12 more broadly at the question based on what we know
13 today which would give us a better technical
14 foundation for the decisions that we make.

15 Thank you.

16 MR. CAMERON: And Tom, I think based on
17 what you're saying, you would agree with and I'm going
18 to characterize this hopefully correctly, David, your
19 comment about when doing this short-term so to speak
20 rulemaking, that the NRC should keep its eye on the
21 long-term needs.

22 MR. MAGETTE: Yes, I think that's a fair
23 statement. I just look at it slightly differently
24 which is that even by focusing on this problem, you
25 will have laid, I think, an appropriate foundation for

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1 the next problem. But to take David's comment, takes
2 it a step further which says don't just focus on this
3 with the notion that you will have laid the
4 groundwork, but be mindful of how what you're doing
5 today may be used as a foundation and therefore be
6 enlightened by how that will then effect the larger
7 rulemaking which is kind of what I see his point as
8 being. And I absolutely agree with that.

9 MR. CAMERON: Good. Thank you for
10 articulating that.

11 Drew?

12 MR. THATCHER: Two points I'd like to
13 make. One, I'd like just to request that the NRC
14 define low-level waste. I don't know whether that's
15 explicitly done through the international -- because
16 I'm not that familiar with that. Let's just define
17 where the box is and really say what low-level waste
18 is. I think that would be helpful.

19 The second is and I'm going to have to do
20 a little story here, but it's a concern that the state
21 has that any new classification system may exclude
22 something that currently is allowed. And the history
23 here would be transuranic waste. The Department of
24 Energy initially said back in 1970, 10 nanocuries per
25 gram. Took about a decade, I think, for the NRC to

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1 say okay, 10. Then in '83 we came by and said okay,
2 anything that's greater than 100 nanocuries per gram
3 is by definition high-level waste and we're going to
4 store that in a separate location.

5 Well, the problem that the State of
6 Washington is facing right now is we're getting a lot
7 of pressure to remove that waste. We only have a
8 couple hundred pounds, but they want us to go into the
9 trenches we have and dig that up. Now we've already
10 included the analysis and the performance assessment
11 for the site, the impact of the plutonium and
12 everything else from transuranic waste. It's not a
13 big driver at all. But that isn't stopping the public
14 from looking at this and going you know, you guys said
15 this was safe here, but then after a while you said
16 that was high-level waste. Do you really know what
17 you're doing? I mean let's make sure we have a good
18 framework for this.

19 The same thing could be said for depleted
20 uranium. We have about 1500 curies at the U.S.
21 Ecology site, not a lot. But nonetheless, I could see
22 the same thing going forward with this as well. So
23 that's the State of Washington's perspective on
24 classifications.

25 MR. CAMERON: Thank you. Drew.

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1 Christopher, and then Steve.

2 Christopher? Do you want to respond to
3 that? Go ahead, Chris.

4 MR. MCKENNEY: One thing that Larry didn't
5 mention about the SRM which goes directly to Dan's
6 point is, is that in addition to us reviewing it from
7 a staff level on what sort of changes need to be made
8 potentially to the rules is that we're supposed to do
9 and suggest what sort of potential legislative changes
10 are needed to parallel the process and to make it more
11 cohesive. That would be everything from possibly
12 asking the legislature to actually change low-level
13 waste policy to actually define low-level waste,
14 rather than the current definition which is a catch-
15 all in its own case.

16 So we'll take that comment.

17 MR. CAMERON: Do you think that if you
18 propose legislative changes, the proposed rule is
19 going to go out for comment, but will you get input
20 from the public on proposed legislative changes?

21 MR. MCKENNEY: When we propose in the
22 legislature and they bring them up in bills, I mean we
23 don't have much pull first of all in getting
24 legislative changes, so --

25 MR. CAMPER: Fundamentally, the problem,

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1 for example, is if we were to -- if we were to change
2 the waste classification scheme today, there are parts
3 of low-level waste policy and law that cites the
4 current waste classification system. If you didn't
5 make corollary changes, you would end up with two
6 waste classification systems. So as you know, what
7 happens is we would propose legislative changes for
8 consideration by Congress to cause an alignment. And
9 in those legislative changes run through the process
10 that Congress follows.

11 MR. CAMERON: So the NRC may need to see
12 if legislative changes are possible before it proceeds
13 with the proposed rulemaking?

14 I'm just trying to clarify this for the
15 public so that they know what to expect.

16 Tison, can you come to the table and --

17 MR. CAMPBELL: Chip, I think I can add
18 some clarification here.

19 MR. CAMERON: Great.

20 MR. CAMPBELL: When Congress passed the
21 low-level waste -- the Low-Level Radioactive Waste
22 Amendments Act in 1985, they acknowledged in the
23 legislative history that the purpose for allocating
24 responsibility for disposal of low-level waste based
25 upon the 1983 regulations was the only reason they

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1 cited to our regulations in the Act. And they
2 acknowledged that NRC or the agreement states or the
3 compacts could change the classification system. And
4 they said that would be fine. The Act would remain as
5 it is. And that would determine how responsibility
6 for disposal was allocated. But NRC or the agreement
7 states could impose additional requirements for
8 disposal.

9 So although I think Larry and Chris are
10 right, we should probably go to Congress and suggest
11 changes to the legislation. The difference between
12 the legislation and the classifications were
13 contemplated by Congress in 1985.

14 MR. CAMERON: Okay, so that the NRC has
15 the discretion to do a comprehensive job on this?

16 MR. CAMPBELL: Yes.

17 MR. CAMPER: And let me reiterate, if I
18 might, Chip. We're not suggesting that the waste
19 classification scheme is necessarily going to be
20 abandoned or changed. We're saying that in the
21 process of risk-informing the waste classification
22 scheme, the staff needs to look at all the options.
23 They need to be going into it with an open mind.

24 MR. CAMERON: Okay. Thanks, Larry, for
25 that clarification. Let's hear from Christopher and

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1 Steve and then go over to Susan.

2 MR. THOMAS: I wanted to reiterate
3 something. There's a historical association that goes
4 along with these classifications, right? So that in
5 Utah, if you asked anyone of our legislators what is
6 Class A waste, they'll say well, it's something that's
7 going to be safe after 100 years. And there have been
8 comments made that hey, you could build a house up
9 there and grow potatoes up there after 100 years and
10 it would be fine because Class A waste will all be
11 gone and there won't be a hazard.

12 And I think what we've heard today
13 acknowledges that that just simply isn't the case,
14 that there are long-lived radionuclides in current
15 Class A waste and the problem even becomes more
16 difficult when you're talking about something like
17 depleted uranium because it is so different. So my
18 point is that as the classification -- like in other
19 words, if there is no A, B, and C later, let me just
20 predicate it with this, that also Utah doesn't allow
21 Class B and C waste to be disposed.

22 So if the current A, B, C go away, that's
23 -- I mean what does the Utah State statute mean?
24 Correspondingly, let's say A, B, and C stay -- there
25 are still an A, B, and C, but the levels change, well,

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1 suddenly now what everybody thought A meant doesn't
2 mean that any more. And so that's why I just think, I
3 would just caution to tread carefully around that and
4 to not only consult maybe the agreement state folks,
5 but maybe also I don't know who else you would
6 consult, but maybe the Council of State Governments or
7 some other legislative bodies as well.

8 MR. CAMERON: Okay, thank you,
9 Christopher.

10 Steve?

11 MR. NELSON: I'm really glad we had this
12 discussion about long-term rulemaking. I'm also glad
13 there's beginning to become a consensus that depleted
14 uranium really is something different. And if it is
15 classified as such at some point in the future, which
16 it certainly ought to be, it begs the question what
17 about those 11,000 tons that are just about -- a few
18 weeks away from being delivered here?

19 What are the impacts of having a
20 regulatory vacuum? And the thing I would like to not
21 only make as a recommendation, but a specific request,
22 I think the staff needs to go to the Commission and
23 make a recommendation that the Commission place a
24 moratorium on the disposal of depleted uranium until
25 this is sorted out.

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1 MR. CAMERON: Okay, so noted for the
2 staff, and one thing we are going to talk about in the
3 next session is what should be done in the interim
4 between now and the completion of the short-term rule.

5 Susan?

6 MS. JABLONSKI: I have a comment and
7 probably a question on the waste classification and if
8 I look at Larry's slides, they're pretty generic
9 talking about -- we're not focused on Part 61,
10 necessarily on your slides, but I think all of our
11 discussion has been about the classification scheme in
12 Part 61. There are groups within the state. There's
13 Organization of Agreement States. There's also the
14 Council of Radiation Control Program Directors. Both
15 of those groups deal with the agreement states on this
16 issue and NRC knows the states' issues with, you know,
17 a rem is a rem, what about all classification, because
18 we approach all waste by origin.

19 And so I wondered if the NRC or is this
20 the beginning of a larger move to look at the whole
21 classification scheme, not just Part 61 with low-level
22 waste or you know, do you have any feel for that in
23 understanding there's going to be some -- those big
24 questions you're going to be covering in this context
25 of waste. But we're dealing with other wastes out

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1 there. We're generating 11(e)(2) waste in our state
2 right now. It's a ramp up of that activity in our
3 state.

4 Do we look to those things as well and the
5 comparisons that might be made down the road with
6 other waste?

7 MR. CAMPER: Well, at the moment, we have
8 specific direction from the Commission in the staff
9 memorandum to budget for reexamining the waste
10 classification scheme in Part 61. We take that
11 direction to budget for as direction to proceed to
12 risk-informed waste classification scheme of Part 61.
13 That is the assignment that we have.

14 Now as we proceed down the road and begin
15 to examine the risk-informed waste classification
16 scheme a litany of questions will surface, but at the
17 moment, that's the assignment that we have.

18 MR. CAMERON: Okay, thank you, Susan.
19 Thanks, Larry.

20 Vanessa?

21 MS. PIERCE: Just a quick point that
22 actually really dovetails with what Christopher just
23 said, but as somebody who interfaces with policy
24 makers that also grappling with questions about
25 nuclear waste disposal policy, I do think there are

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1 some challenges about risk-informing our
2 classification system in terms of, as Christopher
3 said, how do the new risk-informed rules or guidance
4 jive with the existing A, B, C categories if you're
5 allowing long-lived products like depleted uranium in
6 the Class A system when elected officials in the state
7 might have decided to place a ban on the disposal of B
8 and C waste because of concerns that it's hotter and
9 longer-lived and more dangerous.

10 Besides encouraging you to solicit input
11 from those types of policy makers, I would also ask of
12 the NRC that you somehow address this in a meaningful
13 and useful way for those policy makers, so that they
14 can kind of understand what the hell just happened to
15 our state laws and how do we make sure that our state
16 laws remain intact with our desire to prevent certain
17 types of waste from coming in.

18 MR. CAMERON: This could have a dramatic
19 effect on the state legislative framework and a good
20 note in terms of outreach to National Conference
21 of State Legislators and the individual state
22 legislators early in the game is coming about.

23 Did you want to say something else? Okay.
24 Thanks, Susan.

25 This session on long-term was meant to not

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1 only give you information about what's happening in
2 the future, but also it elicited some good suggestions
3 for the NRC to take into account as it works on the
4 short-term rulemaking. So thank you.

5 We're going to go right into other
6 considerations now and then we're going to go after
7 that discussion out to the public for comments on any
8 of this and general comments.

9 Patty Bubar is going to tee this up and
10 we've already had some -- we'll deal with the cats and
11 dogs of the parking lot also after we discuss some of
12 these major issues.

13 Patty Bubar.

14 MS. BUBAR: Good afternoon. As I
15 mentioned earlier, or yesterday, I'm the Deputy in the
16 Division of Waste Management Environmental Protection.

17 And what we wanted to try to do this afternoon is in
18 this session is to really, as we were structuring the
19 agenda for the meeting, we went and took each of the
20 questions that we had in the Federal Register notice
21 and made sure that we had time on the agenda to get
22 input on each of those technical questions and
23 parameters. But we realize that there were other
24 questions or concerns that were relevant to the
25 discussion, but not necessarily to the purpose of the

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1 meeting which was for us to get input to help us to
2 develop the technical basis.

3 So we consciously put this item on the
4 agenda to be able to get some input on some of these
5 questions that we pre-selected ourselves, based on
6 what we had been reading and seeing and hearing out in
7 the news and talking to people. So there may be other
8 issues that you want to discuss during this time
9 period and so we're open to doing that.

10 The ones that we just pre-identified were
11 what -- and we've talked about some of these already.

12 What do we do about previously disposed depleted
13 uranium? Any insight on that question about how to
14 handle it. What do we do about disposing about
15 significant amounts of depleted uranium before the
16 rulemaking is complete? And we've talked a little bit
17 about that also. And then just what we were
18 discussing right before this session is what happened
19 or what do we need to be conscious of in terms of if
20 we make any major changes to the classification
21 system, how we would handle -- what was done
22 previously. So we can take each of those and discuss
23 them if you feel like those are the right questions
24 for us to discuss in this forum, or we can open it up
25 and see if there's other more important things that

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1 you want to talk about or go to the parking lot item?

2 MR. CAMERON: Let's -- one of the things
3 that was brought up and it concerns the interim, maybe
4 we should start with what happens in the interim. I
5 know that a couple of people and Beatrice, for
6 example, were talking about what are the agreement
7 states going to do in the interim? Larry referred to
8 that in his opening remarks and coming on to the tail
9 end of that discussion, there was also the suggestion
10 of do we need earlier NRC guidance for the agreement
11 states? It seems like that's one package. Maybe we
12 could deal with the interim and then go back to that
13 first issue.

14 MS. BUBAR: Yes, on that one, I think
15 Larry may have even mentioned this, but certainly
16 before this meeting we had put out in some
17 communication messages and we've reiterated it that it
18 would be prudent for the performance assessment, for
19 the licensees and the states to work together to have
20 the performance assessment updated before any large
21 quantities of depleted uranium were received. And the
22 criteria that were in the SECY paper can be used as
23 guidance as to what might you want to consider in that
24 updating.

25 So certainly that's a key method. I think

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1 somebody asked Larry yesterday, is that a
2 recommendation or a decision? It isn't, but we also
3 talked about putting out some guidance in the interim
4 and I think that certainly coming away from this
5 meeting, we're pretty clear that that's a necessary
6 thing to do that, that we will need to put out
7 guidance on what does happen in the interim while --
8 or what should be happening in the interim while we're
9 doing the rulemaking, taking into account all the
10 things that we've heard over these past couple of
11 sessions.

12 MR. CAMERON: Thanks for that, Patty. I
13 wanted to get some input from the agreement states
14 first as we started out on this topic.

15 And Susan, you're the one who is here
16 right now, so --

17 (Laughter.)

18 So if you could just talk to this point?

19 MS. JABLONSKI: Well, in the interim, we
20 have these requirements for the site-specific analysis
21 and peak dose is already part of our rules. And so as
22 it sits in the license that we have issued, it is not
23 allowed under the current license for large quantities
24 until those questions could be addressed.

25 MR. CAMERON: So Texas is prepared at this

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1 point.

2 MS. JABLONSKI: I hope so.

3 MR. CAMERON: Okay. Comments around the
4 table around the interim issue and NRC early guidance?
5 Steve?

6 MR. NELSON: Yes, I'll try to be as brief
7 as I can, but -- well, I won't. But I'll try to be
8 reasonably brief.

9 When I left the Board, about the time I
10 left the Board just over a year ago, it was the time
11 that revelations came forward in the media that
12 depleted uranium, this is right up there, box number
13 one, had been disposed at Energy Solutions. And of
14 course, I've been interested in when, how much, what
15 concentration. All that is a little bit of a mystery
16 to me, but I've come to understand and I'm willing to
17 be corrected if I'm wrong, that there was some
18 concentrated material that was disposed in 2000.

19 And this happened under my nose as a
20 member of the Utah Radiation Control Board. I didn't
21 know it was happening. I don't know if the state knew
22 it was happening. I have a recollection, vague as it
23 may be, about an Energy Solutions representative at a
24 Radiation Control Board meeting being asked has
25 depleted uranium been disposed and if my recollection

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1 is wrong, so be it, and I'll be willing to stand
2 corrected, but my recollection is the response was no.

3 And this would have been certainly long after 2000.

4 So I think there is some need for the NRC
5 and perhaps even state regulators in Utah, with
6 respect to this issue of previously disposed DU, need
7 to mend their reputation for one.

8 Now what do we do about it? I don't know
9 that I have an answer. It's out there. You know the
10 question is what do we do about previously disposed
11 DU? Well, I guess one option would be to try to dig
12 it up. But I'm not going to offer specific suggestion
13 there.

14 With respect to your second box, I think
15 the answer is obvious. You dispose of no more
16 depleted uranium until rulemaking and classification
17 is complete. You know, what is the Hippocratic Oath
18 say, first, do no harm or the old saying when you find
19 yourself in a hole and you can't get out the first
20 thing to do is stop digging. Well, let's stop
21 digging. Okay?

22 And with respect to kind of a combination
23 of the second and third squares you have up there,
24 some of us -- some of here have, I think, have reached
25 something of a consensus that DU is a different

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1 animal. I said at the outset of this meeting
2 yesterday that the whole -- this whole meeting is
3 asking the wrong question. I mean nothing has
4 happened here other than to confirm that. And I and
5 I'm sure others around this table have grave
6 reservations about the disposal of depleted uranium in
7 shallow facilities. So really, the thing to do is to
8 stop digging.

9 Now I think if faced with the regulatory
10 uncertainty, I actually would propose that it might be
11 in both the generators' and the disposal companies'
12 interest to maybe hold off. I don't know that I would
13 want to jump into this can of worms if I were them. I
14 would certainly say that it's from my perspective,
15 it's not in the public's interest for us to go ahead
16 and continue to dispose of depleted uranium before we
17 decide what we're going to do with it. That's the
18 classic cart before the horse. I don't think it's in
19 the state's interest. I don't think it's in Dane's
20 and his staff and whoever their successors may be
21 interest to have to backfill, no pun intended, this
22 issue, continuing to dispose when there are grave
23 reservations and again, I come to the conclusion that
24 there ought to be a moratorium on this and if the only
25 body that can do that is the Commission, then maybe

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1 the Commission ought to be the one to do.

2 MR. CAMERON: And to broaden out these
3 remarks into a broader context, we just heard from the
4 State of Texas that they feel prepared with their
5 performance assessment requirements for this
6 situation. And we also did hear, I think yesterday,
7 in terms of previously disposed that would have to be
8 considered when any waste was proposed to come into a
9 site that you have to look at the existing source
10 term.

11 But before we go to others, I wanted to
12 just ask Drew, we're talking about how the agreement
13 states are prepared to go forward in the interim
14 before the NRC rule is finalized. And of course, we
15 heard one suggestion of a solution from Steve that
16 there should be a moratorium. We heard from Susan
17 that Texas has performance assessment requirements and
18 that she feels that they're prepared on this issue.

19 I just wanted to give you as the other
20 agreement state rep at the table to comment, to give
21 your perspective on this before we go to others around
22 here.

23 MR. THATCHER: Sure, thanks, Chip. Two
24 things. One, along with Susan, that we would require
25 performance assessment for the disposal of -- and what

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1 I'm going to say is any significant quantities of
2 depleted uranium. We did an Environmental Impact
3 Statement and performed an assessment in a sense and
4 as part of that we allowed for a given estimate of --
5 until we close in 2056 how much more waste we will
6 take in. Part of that, and I'm going to say it was
7 like 100 curies, so it's not a lot of stuff. If there
8 were anything that were proposed in the next few years
9 that exceeded that amount or it looked like it would
10 pop us in the future past that, we would do a
11 performance assessment. And then we would go from
12 there.

13 So that's how I see the state handling
14 this. And I don't actually see anything in the next
15 two- to three-year time frame coming to the state that
16 would potentially impact that. So we could probably
17 sit tight.

18 MR. CAMERON: Okay, thank you, Drew. I'm
19 going to go to Tom and Dan and then come back to
20 Christopher and Vanessa and Beatrice.

21 MR. MAGETTE: Thanks, Chip. I would start
22 off by saying that there's somehow a notion that's
23 being promulgated that this is something new or just
24 popped up or just came up and I think that's simply
25 not the case. The idea that nobody knew anything

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1 about depleted uranium or where it was or where it was
2 coming from or where it was going until very recently
3 isn't the case. I would go back for one thing to the
4 LES proceedings which have been mentioned here
5 already.

6 In the LES proceedings, the Atomic Safety
7 and Licensing Board, the technical licensing board of
8 the NRC heard expert witness testimony on the topic of
9 whether or not there were suitable shallow-land burial
10 alternatives for the disposal of depleted uranium and
11 determined that there were. Those decisions by the
12 ASLB were appealed to the full Commission on more than
13 one occasion and on all occasions were confirmed by
14 the Commission. So this is not something that hasn't
15 been thought about, hasn't been deliberated. And the
16 Commission in one of those orders went to the staff
17 and said you need to reconsider this. You need to
18 look at this in more detail which the staff which is
19 reported in the SECY 080147 that we've heard a lot
20 about. David's talked about that.

21 There's a lot of technical work in that.
22 It supports the notion of shallow-land burial and
23 there's specific comments about the types of sites
24 that may be suitable, the types of depth of burial
25 that may be suitable that we use, in part, for our

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1 support for the notion that Clive is a good site for
2 the disposal of depleted uranium. We don't base this
3 on its Class A that some box has been checked. We
4 base this on a technical analysis and we understand
5 both the usefulness and the limits of the modeling
6 work that was done as part of SECY 080147. But Marty
7 pointed out that's not a licensing tool. It's not a
8 specific confirmation. We don't disagree with that.
9 But we do understand how one can be informed by and
10 apply that work.

11 And it is useful, applicable,
12 scientifically sound work. And furthermore, staff and
13 the Commission specifically addressed the question of
14 immediate health and safety. Is there an immediate
15 threat to health and safety. Confirmed no. They
16 looked at using an expedited rulemaking process. They
17 looked at issuing an order. This is not a new idea
18 that somehow the NRC should look at doing something in
19 the interim, they forgot to, or didn't do that right.
20 They did look at that. They can speak for
21 themselves. There's several of them here. But I will
22 just echo what they have said in multiple public
23 meetings, including this one, about the immediacy of
24 the problem.

25 So I don't think that there is interim

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1 action that's necessary. I do agree that with the
2 guidance Patty just confirmed what Larry has said
3 about looking at a performance assessment in the near
4 term as I have said repeatedly, the NRC has certain
5 expectations of its licensees, all licensees regarding
6 how they should deal with, whether it's a formal USQ,
7 like John has talked about or any new information that
8 they don't expect licensees to sit back with their
9 arms crossed and wait for a rulemaking, a multi-year
10 rulemaking to take place. When there's new data
11 available, the NRC expects its licensees and expects
12 the same thing of agreement state licensees to act, to
13 act prudently and to act as soon as they can. And
14 that's what we're doing in Energy Solutions regarding
15 the Clive site. So that's a reasonable expectation.
16 I certainly don't dispute it. And no one is saying we
17 should sit back and wait. But we think we have a very
18 sound technical basis.

19 We've talked a lot about waste forms, how
20 they behave, certain waste forms in concern with the
21 environment in which they will be disposed. Those are
22 things that we have looked at, that we have a lot of
23 confidence in, including the near-term acceptance of
24 depleted uranium waste from the Savannah River site
25 which will go on essentially in the basement at Energy

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1 Solutions site at Clive.

2 So I don't accept the notion that this is
3 new or unthought about or an immediate threat that
4 requires an immediate action other than taking the
5 prudent steps to prepare a performance assessment even
6 in advance of knowing the specific criteria that the
7 NRC is going to apply. I think that's our position on
8 all of those topics.

9 MR. CAMERON: Okay, so basically, you
10 don't think that there's anything that needs -- you
11 think that the structure that's in place is going to
12 take care of things in the interim between now and
13 when the rule is finalized?

14 MR. MAGETTE: I think that the steps that
15 the NRC is taking and has taken are adequate to
16 protect the public health and safety and the
17 environment now and in the future.

18 MR. CAMERON: Okay. We're going to go to
19 Dan and then we're going to go to Christopher,
20 Beatrice, Vanessa, and Steve.

21 Dan and then Scott.

22 MR. SHRUM: I hate going after Tom. I'm
23 working on my pregnant pauses on emphasizing things.

24 I've chosen not to bite on the attacks of
25 our facility for the reason that that has not been the

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1 intent of this workshop. I'd like to start out by
2 saying how much I appreciated everyone's comments and
3 input. It's been very useful for me as somebody who
4 is going to have to go out and do a lot of this work.

5 I will choose to address the comment that
6 Steve or Dr. Nelson made earlier and because I was
7 probably part of that discussion. Dr. Nelson used to
8 take students out to our facility and we would show
9 them around and these are students, much like I was,
10 geology students at BYU, that may have an interest in
11 going into this type of profession.

12 And one of the things we would -- I would
13 say what would you like me to talk about? And they'd
14 say talk about how you've done the modeling and what
15 you've done there. And I thought I remember
16 distinctly talking about the modeling that we had done
17 to date, what it represented and that we had modeled
18 the cell not for the disposal of DU, but for the
19 disposal of Unat because that was more problematic and
20 that's what we agreed with with the state and that we
21 had modeled the cell at 100 percent of Unat.

22 Now I fully recognize the limitations of
23 the model that we have at our facility to date. I
24 realize and understand completely the purpose for
25 which that model was created and participated in most

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1 of the models that were done there. So my intention
2 was never or the company's intention was never to
3 mislead or to misdirect. It was always to say this is
4 what we're expecting to receive at our facility and
5 this is what we indeed do receive at our facility.

6 It may not be any comfort to anyone in
7 this room, but we have received DU. We have received
8 what sounds like a lot of DU, 47,000 tons, but when
9 you put it into perspective of the size of the
10 embankments at our facility, it's a very, very low
11 percentage and again, I'm hearing ahh. Well, that's
12 the truth. I've always spoken the truth. That's the
13 reality. That's previously disposed DU.

14 Tom has given a very stout argument of why
15 we believe it's still acceptable to take additional DU
16 and I don't disagree that it's a problem, but I do
17 want to state that we are working on that problem and
18 we will be diligent in working through this issue with
19 everyone involved.

20 MR. CAMERON: Thank you. Thank you, Dan.

21 MS. BRAILSFORD: What is Unat?

22 MR. SHRUM: Sorry, that's U natural. It's
23 as if you had removed it out of the ground. Be
24 careful, as an ore, but concentrated it. So it's not
25 mill tail ends. It's actual ore.

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1 MR. CAMERON: Okay. Christopher?

2 MR. THOMAS: You know, I think there are
3 two things that I think have been most useful that I
4 will take out of this workshop, this exercise. One of
5 them is this slide and the other one is the concept of
6 Class Q. And I want to talk about what the practical
7 ramifications of Class Q versus this weird contrivance
8 of having this DU in Class A.

9 So as you know, Energy Solutions can take
10 Class A waste. So in the interim, they can take
11 depleted uranium. If it was Class Q, on the other
12 hand, they wouldn't probably, they may not be allowed
13 to take it because it would not be considered Class A.
14 It would be something else.

15 So my concern here is that you could go
16 through this whole slide here, initial rulemaking to
17 long-term rulemaking. You could have the Department
18 of Energy's stockpile 700,000 metric tons of depleted
19 uranium disposed in Utah as a Class A waste. And then
20 the problem -- this is the same problem you find with
21 the previously disposed DU. Well, if you try to
22 excise that, if you try to dig it back up, I think you
23 run into ALARA considerations and it's just -- so as
24 low as reasonably achievable which would dictate that
25 it's safer to leave that stuff buried.

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1 So I'm saying to myself this is really
2 strange. We've got a performance assessment that I
3 think Energy Solutions has acknowledged does have some
4 limitations in the current framework. I would say
5 those include only looking at 500 years. So these
6 considerations have not been caught on the front end.

7 However, if you try to remedy them on the back end,
8 you run into other health and safety considerations
9 that mean that it should stay there necessarily. And
10 maybe at the end of this whole thing you get to DU --
11 oh geez, it's actually not Class A, it's Class Z or
12 whatever the heck it is. And then it wouldn't
13 actually have been allowed that whole time.

14 So again, that's why -- this has practical
15 considerations for us as a state. I know it has
16 practical considerations for Energy Solutions. It has
17 practical considerations for us. But I think that's
18 why to me I would like NRC to say let's hold -- in
19 fact, NRC has said -- it's told its agreement states,
20 hey, why don't you wait, update the performance
21 assessments and then dispose. And Energy Solutions
22 and the State of Utah apparently have said we're going
23 to do it anyway. I mean I would just ask Energy
24 Solutions just go with the NRC's request to wait to
25 update the performance assessment and then do it. I

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1 think that's what I've heard the NRC has asked. It is
2 not dictated. But if it comes to that, I think it
3 should dictate.

4 And moreover, I think Department of
5 Energy, Marty, needs to go back and say look, we did a
6 whole environmental assessment on where to put our
7 stockpile of depleted uranium, but that performance
8 assessment only looked at 500 years. Shouldn't we put
9 the brakes on this? And Congressman Jim Matheson from
10 Utah has basically asked that.

11 So I think there's a lot of people who can
12 intervene to do the right thing, in my estimation, and
13 I'm asking that one of those players magnanimously
14 step up and say okay, we'll hold off for a bit.

15 MR. CAMERON: Thank you. And let me try
16 to broaden the context here and I think we need to get
17 clarification on what the NRC did say to the states
18 and Christopher you phrased it as ask the state to
19 wait until they updated their performance assessment.

20 And I just want to explore that point
21 outside of the context of talking about Utah and
22 Clive, but obviously they're included. What did the
23 NRC and the states discuss and I just don't want to
24 hear from the NRC. I want to find out what the
25 understanding of the agreement states, Washington and

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1 Texas was on this.

2 And Patty, can you start us off on this?

3 MS. BUBAR: Yes. First of all, I want to
4 clarify the way we said this. We said this in a
5 communication plan and in questions and answers or
6 frequently asked questions that were put up on our
7 website. Prior to putting those frequently asked
8 questions on our website, we had conversations with
9 the agreement states, the four agreement states that
10 hosted the disposal facilities, to ensure that we were
11 putting out a message that they supported.

12 So what we said was given the possibility
13 that large quantities of depleted uranium will be
14 disposed before NRC completes its rulemaking, it would
15 be prudent for the site operator and state regulator
16 to review the existing site-specific performance
17 assessment. The performance assessment should
18 minimally be reviewed against the initial parameters
19 staff identified in SECY 08-0147. That is what we
20 said.

21 What we said today is that we will take it
22 to a more formal level and put out guidance because
23 this was frequently asked questions and a
24 communication mechanism. We did not say do not
25 dispose in the interim. What we said is what I just

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1 read.

2 MR. CAMERON: And let's hear from Drew and
3 if Susan wants to offer anything additional, fine, but
4 also note that Patty -- I just want you to confirm,
5 too, that you said that the NRC will develop guidance
6 in this interim period?

7 MS. BUBAR: Yes. In fact, we actually
8 discussed that as an option as we were preparing for
9 these meetings and that was something we seriously
10 considered, but we knew practically we would not be
11 able to get out guidance before these workshops. So
12 putting these messages out and these frequently asked
13 questions was something that we knew we could do in
14 the time frame that was available to us.

15 MR. CAMERON: Okay. Let's hear from Drew
16 and then let's go to Beatrice and Vanessa and Steve
17 and Scott and Steve.

18 MR. THATCHER: Thanks, Chip. Yes, from
19 the State of Washington standpoint, Patty was exactly
20 correct. Initially, the first part of the
21 conversations with the states were what do you guys do
22 -- the State of Washington was kind of in a unique
23 position in that we had done this huge Environmental
24 Impact Statement, essentially a huge performance
25 assessment and we were like yes, we had not accounted

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1 for that. We got a buffer of how much uranium we
2 think we're going to take and there's someone in the
3 audience who knows exactly how many pounds and
4 everything. But nonetheless, we said well, no. We'd
5 simply perform another performance assessment if we
6 needed to to revise that.

7 One of the details that you all, being the
8 NRC, wanted to know was well, give us some more
9 details about what that PA really involved. And we
10 did a stochastic analysis. We did a very robust
11 analysis and we were very comfortable with that. And
12 it would not take us much, as a matter of fact, it was
13 like 50 grand for us to redo that, to look at that.

14 Now it doesn't say I can't commit to the
15 quantities of depleted uranium we could take, because
16 it wouldn't know until you come out the other side of
17 the analysis, but it's like yes, we could certainly do
18 this process and that's what we would do. So yes,
19 there was never any discussion through all the
20 conference calls and everything else that sit tight.
21 Because actually, the State of Washington feels like
22 yes, we could actually do this. We would never be
23 able to take the million cubic meters of waste, so
24 that's really not on the table for the State of
25 Washington in any way.

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1 MR. CAMERON: Okay. Patty, did you --
2 let's go down the row here and then we'll go back over
3 there.

4 Beatrice?

5 MS. BRAILSFORD: Okay, I'm going to just
6 ask for clarification about a couple of specific
7 points on this dialogue and then I would like to go
8 back to the other considerations slide.

9 I do think you had said that US Ecology in
10 Washington cannot take waste from out of state for
11 some short period of time. No. Okay.

12 MR. THATCHER: No, I don't believe that's
13 correct. We do have a compact and actually Mike
14 Garner is here and he can talk about the compact and
15 what you can take and whether out of compact waste,
16 but no, I don't believe I made that statement.

17 MS. BRAILSFORD: Okay, and then Marty,
18 since you are the generator in question, you had said
19 that Mr. Matheson had sent Secretary Chu a letter
20 requesting that DOE hold in abeyance these 11,000
21 tons.

22 MR. LETOURNEAU: Yes.

23 MS. BRAILSFORD: And that the Department
24 of Energy is considering that request?

25 MR. LETOURNEAU: The Department of Energy

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1 is trying to formulate what it's position is going to
2 be and we'll be responding to that letter. It was
3 dated the 16th, so it's just a week and a day old. We
4 didn't get it in on the 16th. I think we probably got
5 it on the 18th. So there's a lot of staff work that
6 still has to be done, but absolutely. We're going to
7 formulate a response and respond to that.

8 MS. BRAILSFORD: Okay, and I guess I would
9 note that there is a federal agency and as near as I
10 know, Savannah River has a fair amount of nuclear
11 waste so that maybe you could accommodate storing this
12 material for a while longer.

13 MR. CAMERON: You're going to have to go
14 to another.

15 MS. BRAILSFORD: All right. I said
16 yesterday morning or last year, whenever it was, "see
17 Utah and die" that I was concerned that we were
18 approaching this problem in the reverse order and I
19 would like to restate that. And it is based, in part,
20 on -- I've watched Department of Energy and I was
21 actually kind of pleased to hear DOE's waste policies
22 praised today. Some of the decisions DOE has made
23 over the years have not been particularly praiseworthy
24 and come under the rubric of if you're in a hole, stop
25 digging.

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1 I do think that if we don't come to terms
2 with the larger frame, what we will be left with is
3 future decisions being guided by decisions that we
4 might have made differently if we had looked at the
5 big picture. And disposing of transuranic waste in
6 shallow-land burial is one of them, but there are
7 others.

8 So I would -- I understand that you have
9 this -- the golden tablets or whatever these
10 Commission memos are written on. I understand that
11 you have received those, but I would strongly
12 encourage all of us as we are looking at how to move
13 forward to start with the broader frame and then
14 narrow down and I don't think that the nation will
15 come to its knees if we don't dispose of the DOE
16 depleted uranium. So it's just a real -- we have
17 spent so much energy in this country treating every
18 waste stream at least once and moving every waste
19 stream at least twice. And I would suggest that this
20 might be the time to step back and do some
21 reevaluation.

22 MR. CAMERON: And when you say the larger
23 frame, you mean the long-term rulemaking?

24 MS. BRAILSFORD: Yes.

25 MR. CAMERON: Thank you, Beatrice.

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1 Vanessa?

2 MS. PIERCE: All right. One just quick
3 thing to get on the record. At some point, I know
4 you've asked agreement states to chime in on answers
5 to two of your questions. You've heard a lot from
6 HEAL Utah, a former Radiation Control Board Member and
7 right now Utah is not even at the table. So at some
8 point I would like you to reiterate those questions
9 and have Dane or a representative of the State of Utah
10 answer them because I, myself, am interested in
11 hearing the answer to those questions.

12 MR. CAMERON: In other words, hearing from
13 the State of Utah what you've heard from Texas?

14 MS. PIERCE: Yes. I would like to hear
15 our state chime in.

16 MR. CAMERON: Okay, that's fine.

17 MS. PIERCE: A separate point, however, to
18 get to this question about initial rulemaking. And
19 this was raised a little bit earlier, but I don't
20 think fully addressed. I would like to see the issue
21 of land ownership addressed in the initial rulemaking.
22 So -- and this goes back to this issue of what's
23 Class A versus what's Class Q.

24 Energy Solutions was granted an exemption
25 to the federal law about having federal or state

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1 ownership of land that is used for commercial nuclear
2 waste disposal. That one could make the case that is
3 okay or less problematic for waste streams that
4 typically decay to a reasonably hazardous level within
5 a couple hundred years? But given the longevity of
6 depleted uranium I do think that it is important in
7 the initial rulemaking to address who will be the
8 legal responsible guardian of the land where this
9 depleted uranium is disposed of.

10 MR. CAMERON: Okay, thank you, Vanessa.
11 That's the same point we heard from Christopher
12 earlier on land ownership. Okay, great.

13 Steve, and then we'll go to Christopher,
14 go back to Scott and Marty and Steve.

15 MR. NELSON: I suspect that -- and I am
16 addressing these points on the board, on the screen,
17 and I hope that we can differentiate between what are
18 in my mind legitimate concerns about previous
19 disposal, pending disposal with respect to the
20 eventual disposition rulemaking as being separate from
21 an attack, okay?

22 And if it happens to be that Energy
23 Solutions interprets it that way and if I were in
24 their shoes I probably would view it and characterize
25 it as an attack. But it's borne out of a

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1 consideration for doing the right thing with an animal
2 that is very, very different.

3 And by the way, I think it's a great site
4 for the conventional, for want of a better term, Class
5 A waste.

6 Now with respect to all of this having
7 been done in the open, all I can offer is that as a
8 Radiation Control Board member for ten years, I was
9 hardly a casual observer and I did not know until it
10 was revealed in the media that depleted uranium had
11 been received and accepted at the Energy Solutions
12 site.

13 MR. CAMERON: Steve, I think we're just
14 going to have to stop beating on that drum, okay?
15 That's not really what we're about here. It's an
16 important issue and you've made your statements
17 before, fine. We heard Energy Solutions, but I just
18 don't want to keep going back and forth on this
19 particular issue about who knew what when because it's
20 not instructive for the NRC's rulemaking effort.

21 MR. NELSON: I think it's very instructive
22 for the NRC's rulemaking so the affected parties know
23 what's happening because in the past they haven't.

24 MR. CAMERON: Okay. Well, then that said,
25 that's the point. Okay.

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1 MR. NELSON: Okay, then finally to this I
2 was going to ask some rhetorical questions. I'll just
3 make a statement that reviewing a performance
4 assessment for depleted uranium that extends out to
5 what, 500 years, and then deciding it's okay is a
6 meaningless exercise when we all know and we all
7 acknowledge that the peak activities will be reached
8 much, much later than that.

9 MR. CAMERON: Okay. And Christopher, and
10 then we're going to go to Scott, Marty, and Steve.

11 MR. THOMAS: And I'm glad -- because
12 Patty, I just wanted to go back to you. My point is
13 that revisiting a performance assessment may take some
14 time, so if the goal is to revisit a performance
15 assessment before a lot more of the material under
16 consideration arrives, that can take some time. So
17 again, going back to the request of for this middle
18 box, disposal of significant amounts of DU before the
19 rulemaking is complete that at least a performance
20 assessment is in place and has been reviewed by the
21 agreement program, that at least more -- much more
22 closely resembles the issues that were brought up in
23 the SECY paper and in the DU analysis.

24 So you know, looking a thousand to a
25 million years to me is a lot different than looking at

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1 500. We don't need to go any further than that to say
2 it would be nice to have a performance assessment
3 redone and reviewed by the state that more
4 approximates that one thousand to a million year time
5 frame before more significant material is coming.
6 That was my point.

7 MS. BUBAR: I understand. Thank you for
8 that clarification.

9 MR. THOMAS: Thank you.

10 MR. CAMERON: All right, Scott.

11 MR. KIRK: Patty, what I heard you say is
12 that you expect a performance assessment to be done so
13 that you can assure that the action is safe and that's
14 sort of in alignment with your philosophy on safety
15 culture that you analyze it first and you demonstrate
16 it safe before you take the action.

17 But I would get at is that based on all of
18 these discussions that we've had today, those three
19 questions should be specifically addressed. Sometimes
20 I forget what's said in these meetings. It must come
21 and I think it would be really helpful for you guys to
22 put together what you think the thoughts and positions
23 of the Commission on these three questions, on the
24 slide, based on the discussions that we had today.

25 MR. CAMERON: Thank you, Scott. And

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1 Marty.

2 MR. LETOURNEAU: I did not attend the
3 Radiation Control Board meeting, but one of the things
4 that I understand and if I don't get this correct,
5 Tom, or somebody can correct me, but what I heard was
6 that the Radiation Control Board told Energy Solutions
7 that if they continued to go forward that they would
8 still be expected to meet whatever requirements that
9 would come out of this rulemaking and that if that was
10 problematic, they'd have to fix it. I mean is that,
11 in essence, what I heard?

12 So I mean there is some safety measure
13 that has been put in place here that recognizes that
14 there could be action that had to be taken based on
15 what comes out of the rulemaking.

16 The second thing is that and it's related
17 to the safety measures. The NRC has issued a pretty
18 clear, strong suggestion to the agreement states and
19 to the disposal facilities to look at their
20 performance assessments and look at not only the DU
21 that may already be there, but the DU that is expected
22 to come before the rulemaking is in place. And
23 identify if there is a potential for an issue there.

24 So it's not -- I don't think it's a
25 complete free for all, and I do see what appears to be

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1 prudent measures being taken. I know that everyone
2 would prefer that everything stop until the rulemaking
3 is completed. But there are some practical reasons
4 why that may not be so.

5 MR. CAMERON: Thank you, Marty. And let's
6 go to Steve, Steve Cowne.

7 MR. COWNE: Yes, I'd like to pull the
8 string a little bit more on something that Tom was
9 saying earlier and mainly along the lines of the LES
10 proceedings. What we're talking about here the issues
11 about disposal of DU were evaluated previously by the
12 ASLB and the Commission and quite a bit of discussion
13 took place, quite a bit of technical discussion and
14 evaluations and it was determined that DU could safely
15 be disposed of at that time. And so I would just
16 caution the NRC that if we go forward with regulatory
17 guidance in the interim before the long-term
18 rulemaking is made, that we make sure that somehow
19 that guidance doesn't change or trump or do anything
20 different than what the regulations state.

21 We have valid regulations in place right
22 now. There's no urgency. We've talked a lot here
23 about the time periods involved with this issue.
24 There's no urgency to take action that may not be the
25 right action in the next couple of years. Let's take

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1 our time and follow our process. We have a process to
2 use. So thank you.

3 MR. CAMERON: Okay, thank you, Steve.
4 Beatrice and then Christopher and then we're going to
5 go out to the audience.

6 Beatrice?

7 MS. BRAILSFORD: I actually was at the
8 meeting, Marty, and the assurance of -- and I would
9 really rather -- I think the key things are those
10 questions on the slide. But the safety assurances
11 were in a fairly ad hoc manner and I think what I was
12 saying in response to the questions on the slide, I
13 did want us to acknowledge how much energy and money,
14 frankly, you know, the Department of Energy will end
15 up spending hundreds of billions of dollars correcting
16 mistakes that might not have been mistakes at the
17 time. And we've got better things to do.

18 MR. CAMERON: Okay, Christopher?

19 MR. THOMAS: Thanks. Two points, just
20 real brief. One is could ALARA preclude removal in
21 the future? I just want to note that again and
22 hopefully maybe get a response in a more formal way.
23 And two, I would be happy off line to talk to Marty or
24 whomever at the Department of Energy because you made
25 the statement there are reasons why it should happen

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1 now and I would like to have a better understanding of
2 what those reasons are.

3 MR. LETOURNEAU: That's not exactly what I
4 said.

5 MR. THOMAS: Okay, I'm happy for you to
6 restate.

7 MR. LETOURNEAU: We'll deal with it off
8 line.

9 MR. THOMAS: Okay.

10 MR. CAMERON: Thank you. Thank you very
11 much. On ALARA, Chris?

12 MR. MCKENNEY: Any action of remediation,
13 of course, you'd have to look at all types of options
14 of what would necessarily be needed and that includes
15 feasibility. That includes risks to actual people
16 today and trying to balance that versus future
17 generational risks. That's true whether we're talking
18 about waste sites, decommissioning of a reactor or a
19 license termination, there's always health and safety
20 that you have to worry about to make sure it's safe.
21 You can't just say well, we need to dig something up.
22 It's 180 feet down. We'll drop a guy on a string all
23 the way down. You need -- all those things do have to
24 be taken into account on what options are viable.

25 MR. CAMERON: Okay, we're going to the

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1 public now for comments and we're going to come back
2 up to the table and I'm going to ask Larry at the
3 appropriate time, senior official here, just close out
4 the meeting for us. But I want to go around and let
5 any of you at the table who wants to make a final
6 comment, talk, and then we will adjourn. But we do
7 want to go to the public and I'm going to go to this
8 young lady first, and then we'll come over.

9 MS. WOODRUFF: Hello. My name is Liz
10 Woodruff, and I'm an energy policy analyst for the
11 Snake River Alliance in Idaho. This is only my second
12 engagement with NRC processes and procedures and I
13 would just like to say it's -- the best word I think
14 is fascinating, so thank you for the opportunity to be
15 here and participate.

16 I'm here assisting and supporting Bea
17 Brailsford. She's the expert in our program. I do
18 outreach and education work on these issues, just so
19 you understand where I'm coming to this from and I'd
20 ask that as I make these comments, please correct any
21 assumptions, misassumptions that I make and I have two
22 kind of areas I'd like to cover and the second one I
23 think is more of a general context comment and I do
24 recognize that it's not as relevant to the substantive
25 issue of the rule before you.

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1 The first point I'd like to address is the
2 time frame issues. So just from kind of an outside
3 perspective, not sitting at the table, I know this has
4 been hit a few times, but I've reviewed the minutes of
5 the D.C. workshop and I wanted to kind of pull a
6 thread through from that. Depleted uranium is a
7 unique characteristic of increasing in radioactivity
8 over time, results in the need for disposal pathway
9 with accounts for longer time lines and deeper
10 exploration of implications of potential unpredictable
11 factors that could change the viability of any given
12 site.

13 And I think this especially applies to the
14 Energy Solutions site because it's an above-grade
15 site. At the least from this workshop it's clear that
16 near surface disposal is not appropriate for DU. And
17 according to the NRC's own parameters of low-level
18 waste, even enhanced or near surface disposal does not
19 seem to overcome these issues associated with DU's
20 characteristics. So whether a performance assessment
21 accounts for the failures of a given site or not, the
22 time frame issues associated with DU presents serious
23 mitigating factors for any appropriate disposal
24 pathways.

25 So I heard Tom's point earlier that the

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1 rule of low-level waste does seem to apply to the
2 Energy Solutions site, but that is in opposition to
3 most of the testimony we've heard here and indicates
4 that that simply is not the case. So many of those
5 factors have been addressed by Steve and others of
6 these long-term consequences of DU becoming most
7 dangerous starting in its hundred thousandth year up
8 to the millionth year. But in the D.C. workshop, Dr.
9 Makhijani addressed and I think he addressed it to
10 David Esh the concerns around climate. And I just
11 would like to pull that thread through that the base
12 assumption of the parameters in the performance
13 assessments, etcetera, were made on the assumption
14 that climate is in a static state. Climate changes in
15 a static state. And I haven't heard that addressed
16 here.

17 The factors that are associated with
18 climate change, whether human centered or not, have
19 consequences that have been addressed. And I don't
20 think that it has been resolved. And I think it
21 really indicates that the disposal of DU, especially
22 at the Energy Solutions site would be inappropriate.

23 And the second point is on the
24 difficulties of disposal related to current quantities
25 of DU and potential new quantities. So we know that

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1 there are waste quantities out there, 700,000 tons
2 from DOE, potentially 14,000 tons from the LES site in
3 Eunice, New Mexico that is beginning to be
4 operational. But this does not indicate that there's
5 a need for disposal, that there is a need for new
6 quantities of DU to be produced, that that is somehow
7 an inevitability, right?

8 So the question is, is new enrichment
9 necessary. Why not decrease the apparent urgency for
10 making this rule and postpone the licensing of any new
11 enrichment facilities until the current depleted
12 uranium can be properly disposed of? So rather than
13 focus on how to make a rule for an ever-increasing
14 quantity and concentration of DU, why are we not
15 addressing the actual cause of the problem, rather
16 than the symptom? In other words, instead of trying
17 to form a rule that accounts for inevitable large
18 quantities of depleted uranium and from enrichment,
19 why are we not looking to decrease potential future
20 quantities of DU?

21 So obviously, the LES site is going to
22 inevitably be producing depleted uranium, but that
23 doesn't mean that there's a need for more enriched
24 uranium in this country. As a matter of fact, I would
25 argue that the nuclear renaissance, quote unquote, is

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1 stalled significantly. And there isn't a supply need.

2 So in that instance, I think we should be
3 asking larger questions about -- I know that Mr.
4 Camper addressed the notion that originally back at
5 the D.C. workshop that originally when the DU rule was
6 formed, it was based on the assumption that there
7 wouldn't be large quantities and he asserted in his
8 introduction in D.C. that that landscape has changed.

9 But the changing of that landscape is not an
10 inevitability and it seems to me as though at the very
11 least for the NRC to be acting responsibly there
12 should not be licensing of any new enrichment
13 facilities until this rule is established and a need
14 is justified.

15 MR. CAMERON: Okay, thank you for that
16 comment. And I just want to emphasize for everybody
17 here around the table and in the audience that the NRC
18 did build in this opportunity for let me call them
19 larger issues such as we've heard to be addressed, to
20 give the public an opportunity to say those. So if
21 anybody is feeling well what does that have to do with
22 the rulemaking, this is a larger opportunity here to
23 hear from the public.

24 And could you introduce yourself again,
25 Claire?

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1 MS. GEDDES: It's Claire Geddes. I wanted
2 to address, first I want to thank you all for giving
3 us the opportunity to come here. It's been very
4 helpful for me and it's something that we've never --
5 we didn't get on the state level when this decision
6 was made and that's something I want to talk about.

7 It's been said here that the Board voted
8 on this. And any of you who were at the meeting know
9 exactly how it happened. I was astounded. There was
10 a letter dropped off apparently the night before at
11 the head of DEQ. And these board members were told
12 through the director that she had this letter and this
13 was okay, they could do this. There was no time for
14 any of us to even speak. There was absolutely
15 nothing. I've never seen -- when we've had a decision
16 of this magnitude on -- they did it as an amendment to
17 the license. We always went through several stages
18 and I mean this is very concerning to me because I
19 know there is a very strong consensus out in the
20 community that they don't want this waste. And it
21 looks to me like it's being shoved down our throats in
22 a very improper manner and I think that's one thing
23 that should be addressed.

24 We should be able to have a process like I
25 hear you're talking about that you have at the state

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1 level. I'm also concerned we don't even have a person
2 here. And that tells me a lot. I feel like I'm not
3 comfortable at all with the regulation I've seen in
4 Utah and I believe the regulation is too close to the
5 company and that's the thing I'd like the NRC to
6 address.

7 MR. CAMERON: Okay, thank you for that
8 comment and would you like to make a comment also?
9 Just introduce yourself to us.

10 MS. SERLES: I'm Christine Serles and I'm
11 just a little public bird here today, but as I was
12 growing up I watched them move uranium tailings from
13 21st South and 500 West and I had been over there as a
14 kid several times and I thought if this stuff so safe
15 why is it we're moving it from 21st South and I never
16 really did understand where they did move it. But I
17 remember it costing a lot of money. Now those are
18 just my recollections as a child, but also I want to
19 know if we do put this out there at Energy Solutions,
20 my mother is buried deeper than that. I know she is,
21 because we dug double deep, okay? And that does make
22 me worry because it says low level if you inhale it is
23 dangerous, even fatal.

24 So digging down ten feet and we're burying
25 it, also, isn't there water down underneath this

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1 little valley here that I remember somebody talking
2 about pumping out and using? That's been a few years
3 ago, but I just want us to look at all of these
4 options and again, our mountains do capture the water
5 and it rolls downhill. So let's look at all these
6 things that we should look at for not just us, our
7 children, our children's children and we are very,
8 very populated here with children.

9 I want to thank you also for being very
10 honest because honesty is the best policy and if you
11 speak honest, people understand that. Not dancing
12 around words, not dancing around the questions, not
13 coming back and forth to these questions, but just
14 straight forward in the first place.

15 MR. CAMERON: Thank you. Others on either
16 the issues? Okay. And we're going to go to you. And
17 then we're going to go over there.

18 Please introduce yourself again to us,
19 please?

20 MS. FRANKLIN: My name is Naomi Franklin.
21 I am a research professor of biology and a very
22 concerned environmentalist.

23 I will not reiterate all of the cart
24 before the horse instances in this particular
25 situation. I find it particularly egregious that

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1 another 14,000 metric tons of DU were agreed to be
2 delivered to Clive during the summer at a time when
3 the Utah Board was supposed to be considering a
4 moratorium on DU delivery, a moratorium that was
5 advocated by HEAL Utah.

6 It was also at a time before Energy
7 Solutions had assigned any particular advisor to
8 prepare them for the delivery of this kind of
9 material. They seem now to require an advisor for
10 that purpose, but it didn't come up previously.

11 But I think I have learned a good deal
12 from the discussion here and in particular I have the
13 impression from what I've heard that the NRC has been
14 under particular pressure to deliver DU waste to a
15 repository in a big hurry. They found it convenient
16 to classify the waste as low level, although as we
17 heard there was considerable discrepancy in thinking
18 on that subject.

19 (Pause.)

20 It seems like there's a peculiar sudden
21 accumulation of DU at the uranium enrichment plants
22 which are licensed by the NRC. I would like to
23 understand this particularly large surge in the
24 presence of DU in our enrichment system. Is it
25 because there is no longer a call for commercial uses

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1 or is it because there is an increase in the amount of
2 uranium being enriched?

3 I'm very much in agreement with the
4 previous statement made by the young lady over there
5 that it seems that the expectation for one million
6 tons of DU which is now being stated by the NRC, this
7 is a very peculiar large expectation. Why are we
8 enriching uranium at this point in our considerations?

9 The President and many nations are calling for a
10 reduction in the presence of nuclear arms. Is the
11 uranium being produced for fuel in nuclear energy
12 plants? I would not imagine that it was being used
13 for nuclear weapons at this time. But perhaps that
14 could be accounted for.

15 I would really like to understand the
16 expectation of one million metric tons of DU in our
17 system and this, it seems to me, is the question that
18 should be asked.

19 MR. CAMERON: Thank you, Naomi.

20 Yes, sir. Please introduce yourself to
21 us.

22 MR. MARKS: Thank you. My name is Jay
23 Marks. I work for the Proposition 1 Committee in
24 Washington, D.C. We're touring the country in favor
25 of nuclear disarmament and economic conversion of the

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1 nuclear industrial complex to peaceful purposes and
2 renewable energy.

3 Thank you for holding this hearing and for
4 taking public comment.

5 I guess the good news is that this stream
6 of depleted uranium is not being channeled further
7 into the military industrial complex and not being
8 used to create more weapons that are ultimately
9 radioactive the way depleted uranium has been used in
10 Iraq on separate occasions and in former Yugoslavia.
11 So that's the good news.

12 I'd certainly like to echo this woman's
13 comment and other comments earlier about what is the
14 expectation of this amount of new depleted uranium?
15 Why on earth would we be expecting that? I recognize
16 that certainly the nuclear industry is hoping that
17 there will be a so-called nuclear renaissance and that
18 nuclear energy is a fuel for the future, but I think
19 anyone who has been looking at the reality of the
20 climate and looks at the reality of the waste stream
21 generated, not just depleted uranium, obviously, but
22 the entire waste stream of nuclear energy cycle,
23 understands that nuclear is not an energy of the
24 future. It's actually an energy of the 20th century
25 and the past. And the real energy of the future for a

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1 sustainable environment, the one that we all hope to
2 have and share for many, many generations is solar,
3 wind, truly renewable energy and I hope that Energy
4 Solutions of Utah channels some of their future
5 thinking towards expanding, developing, and deploying
6 truly renewable technology.

7 Utah is very rich in solar and wind
8 resources. If we can just muster the energy and the
9 resources that are now being spent on getting ready to
10 expand the nuclear industrial complex, if we channeled
11 a fraction of that towards development and deployment
12 of truly renewable technologies, this is not just for
13 you and the NRC. I recognize it's not the job of the
14 NRC to plan for the eventual demise of the nuclear
15 industrial complex, but I hope that in the Department
16 of Energy it would be nice if the Department of Energy
17 actually were looking towards renewable energy
18 solutions, rather than basically being the Department
19 of Nuclear Weapons and Nuclear Materials.

20 We do finally recognize that the end
21 product of the nuclear energy process cycle, plutonium
22 being one of the end products, is really the beginning
23 product of the nuclear weapons cycle and at a moment
24 when our President is chairing the Security Council
25 and leading the world towards a world free of nuclear

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1 weapons, something else that I hope and trust that we
2 all yearn for and work for, that perhaps it's not
3 necessary for us to continue a technology that is
4 building -- that is creating plutonium which at the
5 very least is an environmental hazard and a security
6 risk forever, and at worse, might end up in more
7 nuclear weapons.

8 Thanks again for the opportunity to speak
9 on this.

10 MR. CAMERON: Thank you. John, do you
11 have something? Then I'll go over here.

12 MR. GREEVES: John Greeves. Two comments.
13 First, and they're completely separate comments.
14 Unique waste streams, you're charged with looking at
15 Part 61. I'd ask you to pay attention. There are
16 other ways to disposition waste. There are a number
17 of exemptions in the regulations. If you're going to
18 require site-specific analysis that accounts for
19 what's already in the ground, what you're disposing
20 today and what you're anticipating, I urge you to look
21 across the various pathways for disposal, not just
22 Part 61. That's a comment. I think you understand
23 what I'm saying.

24 Second, the topic of the long-term
25 rulemaking, my observation is I think there's a

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1 tension between the short-term rulemaking and the
2 long-term rulemaking. I don't think you can do the
3 short-term rulemaking in 10 CFR 61.55 without dragging
4 a little bit of the longer term with you.

5 Chris McKenney made an eloquent
6 discussion. I invite you to examine the transcript
7 after the meeting. In 61.42, I believe what he said
8 was we need to improve the way that we require site-
9 specific analysis. I don't think you can do it in
10 61.55. You've got to jump into 61.42. He also
11 pointed to the period of performance. So I just
12 invite you to examine that I think you're going to
13 actually end up with a bit of the longer term piece,
14 some of us think in longer term pieces. You're going
15 to have to look at that even with the shorter-term
16 piece.

17 It's an observation and I've heard others
18 say it in different words. So thank you for the time.

19 MR. CAMERON: Thank you. Yes, sir.

20 DR. MOENCH: Brian Moench, President of
21 the Utah Physicians for a Healthy Environment.

22 Most of the depleted uranium in this
23 country is stored in large steel cylinders that it's
24 been well documented they originated were constructed
25 for containing phosgene gas. And the Department of

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1 Energy acknowledged as of 2000 that the phosgene was
2 not adequately -- these steel cylinders were not
3 adequately cleaned after containing phosgene.

4 Disregarding that issue for a moment,
5 there is no question that nobody considered the
6 storage of depleted uranium in these steel cylinders
7 as anything other than a short-term solution to a
8 long-term problem. And yet, the whole strategy here
9 of sending these steel cylinders to Energy Solutions
10 to be buried under X number of feet of earth is
11 obviously designed to be a long-term solution. So if,
12 in fact, these steel cylinders were constructed at one
13 time with the intent of lasting at least decades, but
14 certainly not much longer than that, and then these
15 steel cylinders are going to be buried underneath the
16 ground as part of a long-term strategy, there's an
17 inherent contradiction there.

18 There's photographic documentation of the
19 fact that many of these steel cylinders are already
20 being breached and eroding and seeing how some of the
21 depleted uranium in these cylinders is already in the
22 form of uranium gas, if these steel cylinders continue
23 to be breached, whether or not they're under the
24 ground, eventually that uranium gas will at some point
25 reach the atmosphere. So I'd like to know how anyone

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1 addresses this sort of inherent contradiction.

2 MR. CAMERON: Thank you, sir. I'm going
3 to come back to the table now and I want to give
4 everybody around the table, if they wish, pardon me?

5 What did you want to ask? Okay. We're
6 not into clarification, but ask quickly.

7 MS. ANDERSON: Sorry, guys. I'm a little
8 out of turn. So I just want a little bit of
9 clarification from NRC staff about -- I'm Sarah
10 Anderson with Radwaste Monitor and I wanted a
11 clarification from staff. I know that now Chairman
12 Jaczko was kind of the strongest voice on the
13 Commission about opposing DU being Class A waste and
14 given that we've heard that NRC is going to come back
15 with near-term guidance I was interested in what the
16 time line was for that more near-term guidance and
17 whether or not there is any possibility that the near-
18 term calculation might change or that the NRC might
19 more strongly recommend doing performance assessments
20 before interim storage of DU?

21 MR. CAMERON: Okay, and let's deal with
22 this rather efficiently. In terms of the guidance
23 question, do we have an answer for when that might be
24 available?

25 MS. BUBAR: We don't because we haven't

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1 really sat and talked about what the resources
2 associated with it would be and what would be the
3 relative prioritization of the guidance versus
4 everything that the staff has to do to actually begin
5 the development of the technical basis now that we're
6 finished these meetings. So I can't give an answer
7 without having had a chance to discuss it amongst all
8 of ourselves.

9 MR. CAMERON: Let me just add from a
10 process point of view on those other issues is that as
11 I said at the Bethesda workshop, although the staff
12 has the -- as Beatrice called them, the golden tablets
13 -- staff requirements memorandum that gave the staff
14 direction from the Commission, majority of the
15 Commission to do this initial rulemaking and then to
16 do the long-term rulemaking that comments from people
17 around the table was we heard Beatrice say the larger
18 frame should be first. We've heard comments like
19 that, that even though those are not directly related
20 to this initial rulemaking, that those comments of
21 that type will be communicated to the Commission for
22 their reflection and as usual with the relationship
23 with the staff and the Commission, if the Commission
24 thinks that this should be reexamined, they will
25 certainly discuss that and tell the staff about that.

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1 And what I'd like to do now is I'd just
2 like to thank all of you around the table for great
3 discussion. Obviously, we got into some commentary on
4 the situation in Utah which is only natural, but most
5 of the commentary was relevant to these rulemaking
6 issues. And I would just thank you for all of the
7 discussion and I asked Larry to close the meeting out
8 for us, but I wanted to give all of you an opportunity
9 first around the table to just offer any remarks about
10 process or whatever and I'm going to start with
11 Beatrice and let's go to the external participants on
12 this and then we'll let Larry close it off.

13 Beatrice, would you like to say anything?

14 MS. BRAILSFORD: Thank you. I think this
15 has been a very valuable process. I would like to
16 encourage you -- and I won't say again that I don't
17 think -- well, yes, I guess I will say again that I
18 don't think depleted uranium is appropriate for
19 shallow land burial. I will say again that I think
20 you do have to look at the larger frame or we'll be
21 right back in the mare's nest we're in now.

22 I would like to ask you, Chip, just
23 because there are a lot of people in this room, to
24 emphasize that the comment period for this, that we've
25 been spending two days talking about, the comment

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1 period for this decision, this path forward, whatever
2 you want to call it, doesn't end until October 30th,
3 so we have lots of time to continue to mold the
4 issues, both those of us who have listened to all
5 sides for the last two days and everyone. I mean this
6 is a big damn deal. And if Chip could put the comment
7 period deadline and the ways to get your voice heard
8 in this process, I think we'll have a better decision
9 in the long run.

10 MR. CAMERON: Okay, thank you for that,
11 Beatrice. And it is October 30, 2009. There's
12 various ways, electronically, hard copy, to provide
13 comments. We have the Federal Register notice out
14 there on the table and right on the front page of
15 that, you don't have to dig through it, right on the
16 front page it has how people can comment on this
17 issue. Thank you, Beatrice, for bringing that up.

18 Vanessa?

19 MS. PIERCE: I, too, would just like to
20 thank everybody who participated in this process. I
21 thought we did have a lot of good discussion and there
22 were a couple of times where HEAL Utah and Energy
23 Solutions agreed on some things, so that's kind of
24 exciting.

25 (Laughter.)

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1 I guess my bottom lines would be that we
2 would also urge the Commission to consider taking a
3 step back and considering whether evaluating a
4 geologic repository would be a more ideal way to
5 handle the disposal of depleted uranium. We would
6 also strongly urge the NRC to consider nailing down
7 the definition of Class A waste, rather than allowing
8 it to persist as a catch-all category which I think is
9 the root of a lot of the problems that we've been
10 discussing today. And I would also continue my
11 suggestion for considering Class Q waste.

12 Thank you.

13 MR. CAMERON: All right, thanks, Vanessa.

14 Steve? Steve Nelson.

15 MR. NELSON: I was just going to simply
16 say that I had said too much already and not say
17 anything, but I decided not to do that, but I will be
18 brief. With respect to something you said, Chip, to
19 begin this final round of comments, I suspect that the
20 choice of Utah for a workshop was not made in a
21 vacuum. Whether you view it as an attack or a
22 relevant part of a discussion, Clive is a relevant
23 case study to many of the things we've talked about
24 today and yesterday, performance period, site-specific
25 criteria. And also, most recently, under your issue

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1 five, other considerations, should we proceed to in
2 place or should we not. And also relative to issue
3 five is trust and transparency and I think everybody
4 knows what I'm alluding to there. That is also a
5 relevant consideration. Oh, and salt.

6 MR. CAMERON: Thank you, Steve.
7 Christopher.

8 MR. THOMAS: I guess I came into this
9 really wanting to -- well, first of all, let me say
10 thank you again, too. I've learned a lot. I've
11 enjoyed my interactions and conversations with many of
12 you.

13 Tom, if there's a time that we can talk
14 about alternate feed, we would be open to that
15 discussion. But I want to -- here's my main concern.

16 My concern is that the outcome of this process not be
17 predetermined. Nothing in it has happened here has
18 actually quenched that concern as I looked at those
19 boxes, because I feel as though as long as you want
20 depleted uranium of this type and quantity into Class
21 A, it's going to be coming to Utah. And even if later
22 there's something that says okay, geez, maybe that
23 wasn't good, well then you've got other issues you
24 have to deal with like ALARA. So I'm not sure at that
25 point that you have a remedy.

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1 The question is, is there a remedy for the
2 thing that happens in the interim if it turns out to
3 be not good later. And I think all of a sudden there
4 is no remedy and you're in the realm of mitigation.
5 Well, so maybe you do the best you can to mitigate
6 from then until some future point where it does become
7 a problem and then we're in a situation as Bea talked
8 about where you are having to spend lots and lots of
9 money. Maybe everything else has decayed pretty much,
10 but you've got -- well, even though I don't know if it
11 would be safe to take out and put somewhere else.

12 So anyway, I'm just saying the way it's
13 set up now I'm concerned that there's a predetermined
14 answer for what's going to happen with the DU, the
15 depleted uranium from Department of Energy.

16 Secondly, I think we have talked about
17 some of these larger issues -- oh yes, and I think
18 that's a function of the narrowness of the way the
19 Commission order was drafted. It was drafted in a
20 very narrow way to amend a certain part of the
21 regulations that would make DU Class A and all that
22 stuff, but I would say there is an opening, I think,
23 however small, to pursue a different approach.
24 Because as I looked at that Commission order I thought
25 this is really interesting. There's a statement here

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1 that says as an initial approach. Do all this as an
2 initial approach to this issue.

3 So I would just encourage other panelists
4 who have some comments outside of the very narrow
5 frame of this looking at as a Class A waste, etcetera,
6 to really let the NRC know we think this should be
7 approached in a different way because I do think there
8 is some consensus on that. And that's certainly going
9 to be some of our comments and I think we would prefer
10 to step back and not dispose of this before more
11 analysis is done that I think everybody would feel
12 more comfortable with.

13 Thank you.

14 MR. CAMERON: Thank you very much.

15 David?

16 MR. KOCHER: Thank you. I want to make
17 two points in closing. I'm going to do something that
18 you shouldn't do at this stage and that's just mention
19 a new issue that has not been discussed at all.

20 (Laughter.)

21 But I'm just going to throw it out, but
22 that's the second point.

23 The first point, I referred to DU as a
24 different kind of beast. Let's be clear that it's not
25 just because the half life is very long. It's not

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1 just because the activity increases over time. It's
2 not just because radon builds in. It's because we
3 have lots of it. It's the one million cubic meters is
4 really a key part of this issue. If we just had a few
5 barrels of depleted uranium I don't think we'd be
6 here.

7 The issue I want to raise is about
8 chemical toxicity of depleted uranium. One of the
9 frequently asked questions in the communication plan
10 raised this issue and basically the answer was the NRC
11 is not going to deal with this. I would suggest
12 that's not an enlightened approach. It may turn out
13 that chemical toxicity is not more important than
14 radiation dose from depleted uranium, but it may not,
15 the opposite may be true.

16 So at a minimum, the NRC needs to have in
17 its desk drawer some calculations which if you receive
18 a dose of 25 millirem, what's the impact on the
19 kidney? Is it above a threshold? Is it below a
20 threshold? Is it not? You really have to do this and
21 if the NRC doesn't do it, the states should require
22 it.

23 Thank you.

24 MR. CAMERON: Okay, thank you, David.

25 Susan? Scott?

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1 MR. KIRK: I found these hearings very
2 helpful and educational for me. There's a lot of good
3 back and forth, a lot of good discussions. It was
4 very helpful for me to understand the issues and other
5 people's perspectives.

6 I compliment the NRC for putting so much
7 time and effort to putting this workshop together and
8 I'm very interested in seeing the outcome and I hope
9 it's not a predetermined outcome either and again, I
10 just look forward to seeing the guidance.

11 I don't mean to be impolite right now, but
12 I must go to the airport and again, I just want to say
13 thank you very much for your time.

14 MR. CAMERON: Thank you, Scott.

15 Marty?

16 MR. LETOURNEAU: I would like to express
17 my appreciation to the NRC for creating this type of
18 an event. I think this was a fantastic panel. I
19 think that it's fantastic that the public gets the
20 opportunity to see these types of interchanges. This
21 panel was chock full of people that had important
22 perspectives and knew their fields and this was very
23 much a pleasure for me, a privilege to be a part of
24 this.

25 I wanted to thank everybody in the

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1 audience who took the time to come here, to listen or
2 to learn or just to be here to share your opinion with
3 us. I thank you very much. And this is a good model
4 for how things should be done.

5 MR. MAGETTE: First of all, I'd like to
6 thank you, Chip, personally for the work that you've
7 done. We really couldn't have done this panel in any
8 sort of way half this effectively without your
9 guidance and your hand on the tiller, so I appreciate
10 that. I appreciate also what the NRC is doing with
11 this process. I think I like the process. I think it
12 is important and will help you find a better proposed
13 rule the first time around having done this. I
14 appreciate the fact that you hold these workshops. I
15 personally appreciate the fact that you've included
16 me. I'm privileged to have done that, as Marty said.
17 I'm especially privileged that you've allowed me to
18 do it twice.

19 (Laughter.)

20 Maybe next time you could just ask me to
21 do it once. But I also appreciate the other panelists
22 and the contributions that everybody has made. The
23 different viewpoints have been helpful.

24 I would also like to thank the NRC for the
25 work that they've done going into this. As I said

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1 before, I do think that there's a lot of technical
2 work that we're building on and the one difference I
3 have with some of the comments is the suggestion that
4 we're starting from scratch because I don't think we
5 are.

6 And I'd like to conclude by saying what I
7 would like to see the rule look like, give you some
8 specific feedback as to the specific topic of these
9 workshops. I agree with the selection of the second
10 option with what the Commission has directed. I think
11 that's a sound approach. I agree with the notion of
12 the two-phased approach that's been suggested that
13 they could merge or be one or that the larger one
14 could go first.

15 I don't necessarily disagree with that. I
16 think there's a lot to that idea, but I still think
17 it's actually better to do it this way because I do
18 think having done this you will really have done a lot
19 of the work for the next one. And it will be more
20 helpful to have done it with the focus on the depleted
21 uranium waste form. So I think that is a good
22 approach.

23 I like the idea of the -- in this
24 particular case, a new regulation that requires a
25 site-specific performance assessment for the disposal

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1 of large quantities of depleted uranium without
2 specifying what that minimum quantity is, that the
3 trigger point be the disposal and if you need
4 phraseology, it could be for example, pure waste
5 streams from the deconversion process from enrichment
6 of uranium, but that that's the kind of trigger you
7 should have.

8 I also believe that you shouldn't try to
9 include something called other unique waste streams
10 because I think that will cloud the issue and I don't
11 think you can appropriately define that. Furthermore,
12 I think the performance of a site-specific performance
13 assessment with an evaluation of the complete source
14 term and in something like a DOE Order 435.1 approach,
15 you will capture those issues and you can also capture
16 them in a predictive way when you have a waste stream
17 coming that you haven't previously specifically
18 analyzed and it's not a start from scratch with your
19 performance assessment if you have to do that.

20 I don't like the idea of trying to define
21 something that you don't know what it is. So I would
22 again urge you not to do that.

23 I also think the distinction between rule
24 and guidance is extremely important. I think the rule
25 should be fairly simple. But I also think that there

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1 are things in your guidance today that belong in rule.

2 And so I would urge you to revise subpart C of Part
3 61, the performance objectives that I have referred to
4 several times to specify an intruder dose at a period
5 of performance because I don't think having those in
6 guidance is really sufficient to get the end result
7 that you want and need.

8 As for guidance, if you're going to talk
9 about scenario selection, whether you're talking about
10 thefts or taken in transport for -- transport pathways
11 or dose pathways or dose receptors, whatever all those
12 things might get in terms of the treatment that you
13 give them or the minimum specifications, or as you put
14 it, in the Federal Register notice the criteria that
15 you want to include, those belong in guidance, not
16 rule.

17 So thank you for the opportunity to make
18 these comments. I have enjoyed being a participant
19 here.

20 MR. CAMERON: Thank you, Tom.

21 Dan?

22 MR. SHRUM: Oh, good. I'm after Tom,
23 again. Is that better?

24 Again, I'd like to thank everyone who has
25 participated. I'd especially like to thank the NRC.

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1 I know that this is informative for you, but it's also
2 fairly stressful. I'd also like to thank those who
3 have shown up. It's been encouraging to see the
4 positions that have been expressed and the way that
5 they've been expressed have been very fair and I would
6 encourage that into the future.

7 I would just reiterate what Tom said, that
8 it's important that the rule be usable for those who
9 have to implement it. I'm not going to repeat what
10 Tom said. It's on the record, but it will look about
11 like what he just suggested.

12 And again, thank you. And thanks to Chip,
13 I list the things that I wouldn't do well and being a
14 moderator something like this is in the top ten. So
15 he's done an excellent job and I thank him for that.

16 MR. CAMERON: Thank you. Drew.

17 MR. THATCHER: Thanks, Chip. Everything I
18 was going to say just went out of my head. You guys
19 had mentioned the possibility of a town hall meeting,
20 etcetera. I've been to tons of meetings in my life.
21 One of the things that's a real drawback in a town
22 hall meeting as opposed to this is that people pose a
23 question and then nobody answers it. And in this
24 case, except for the very end here, in almost every
25 instance, we answered questions and we kept talking

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1 about them until we resolved it, at least as much as
2 we could. And that is a real benefit in that I tell
3 you, in a town hall meeting when someone voices a
4 concern, and that's it. It doesn't help them and I
5 don't think it helps anybody. So I don't like that
6 format, so just from my own standpoint.

7 I had about six things I was going to say,
8 but you know what, there's no point. I think this is
9 very, very good and I appreciate being involved.

10 MR. CAMERON: Thanks, Drew.

11 Steve?

12 MR. COWNE: Yes, I'd like to thank the
13 NRC, Chip, in particular, for sponsoring the workshop.

14 I thought it was a very useful forum to have. I'd
15 like to thank all of the panel members for their
16 contribution, everyone. I was very impressed with the
17 professionalism and the honesty and integrity of
18 everybody here involved. So I go away with a positive
19 experience on that.

20 One of the things I wanted to say though
21 about the NRC, I noticed a couple of line of questions
22 or tones or whatever, maybe the question of whether or
23 not the motive or whether or not the NRC has the
24 public health and safety foremost in mind. And I
25 wanted to reflect upon that by saying that I've been

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1 in the nuclear industry now for 26 years, always as a
2 licensee on the other side of the table from the NRC.

3 And I haven't always agreed with them on their
4 positions, but the one thing I can say is I believe
5 the Nuclear Regulatory Commission is the most
6 competent and most professional federal agency that
7 there is and you've always had public health and
8 safety foremost in mind.

9 Thank you.

10 MR. CAMERON: Thank you, Steve.

11 And Greg Komp from the Army had to leave
12 early, but he has a colleague here who is going to
13 offer a few words.

14 MR. CORNETTE: Hi. My name is Derek
15 Cornette with the Army Safety Office and Greg wanted
16 me to thank the NRC for inviting the Department of
17 Defense. This is my first meeting like this and it's
18 been quite informative. I've learned a lot and DOD
19 would definitely like to be included in any future
20 meetings.

21 MR. CAMERON: Thank you, Derek.

22 Larry, I'm going to go you now.

23 MR. CAMPER: Thank you, Chip. I do have
24 some concluding remarks that I will make and they will
25 be very similar to those that I made in Maryland a few

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1 weeks ago. But before I go into those concluding
2 remarks, I do want to pick up on a theme that I've
3 heard in the last hour, in particular, although
4 throughout the meeting along the way, but certainly in
5 the public commentary from the members of the
6 audience, members around the panel as well. And
7 that's this issue of Commission awareness. The
8 Commission deliberated this issue at some length
9 before it made a decision. And the Commission remains
10 very interested in this issue. We will, of course --
11 this meeting is transcribed. We will review the
12 transcription. We will summarize key findings of the
13 meeting.

14 Each of the Commissioners have
15 Commissioners' Assistants. The Commissioners'
16 Assistants review transcripts from meetings such as
17 this. We also plan to conduct a briefing of the
18 Commissioners' Assistants to share with them what
19 we've heard in these two workshops.

20 Yes, this workshop, these two workshops
21 have been principally designed to address the
22 technical issues that you had before you that Dr. Esh,
23 in particular, and other members of the staff have
24 shared with you to help initiate the process for
25 developing the technical basis for a rulemaking. But

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1 in addition to that, the Commission is greatly
2 interested in hearing stakeholders' concerns at large.

3 So I assure you that we will be informing the
4 Commission about everything that we've heard here,
5 what are all the key points that have been made.

6 Chairman Jaczko has already asked me for a
7 briefing of him after the meetings are concluded and I
8 would not be at all surprised, and in fact, we
9 probably expect for the other two Commissioners to ask
10 for a face-to-face briefing as well. That is at their
11 discretion, but I would not be surprised.

12 So the Commission will be fully aware of
13 what has transpired here in this workshop and the last
14 workshop.

15 Let me, in closing though, let me continue
16 the thanks. I want to thank my staff, not only for
17 the work that went into preparing for this workshop,
18 but it's also an issue that the staff has wrestled
19 with diligently for about the last two and a half
20 years, ever since the Commission gave us the SRM, at
21 least two and a half, three years ago. And I must
22 tell you that looking back over the many, many
23 discussions that I had with the staff, the incredibly
24 lively, animated, deeply intellectual, highly
25 sophisticated, scientific discussions about this

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1 issue, it would be an understatement to say that the
2 staff has worked very hard on this issue and I thank
3 them profoundly for their work and their competence
4 and their dedication to addressing this very, very
5 difficult issue.

6 In terms of the meeting itself, Priya and
7 Dave and everyone on the staff that has touched this
8 issue, a tremendous amount of work goes into planning
9 for a workshop like this. It just does not happen.
10 There's logistics, of course. There's the Federal
11 Register notice. There's trying to identify the right
12 questions to share with the panelists. It's a
13 tremendous amount of work and I thank the staff for
14 the actual work devoted to the workshops themselves.

15 The panelists, you know, what can you say,
16 where do you begin to thank the panelists for your
17 input, for your dialogue, for your debate, for your
18 experience, for the diversity of the views that you
19 bring to the table? The diversity of those views
20 serves an extremely valuable purpose and sometimes the
21 dialogue that goes back and forth, people have strong
22 feelings about these things. On some occasions,
23 they're emotionally charged about it. That's okay.
24 It's okay. It's part of the process.

25 We asked Chip to construct a diverse panel

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1 of stakeholders and I think that has proven to be the
2 case here and in Washington and we knew especially it
3 would be the case here in Utah. Why wouldn't it be?
4 The disposal facility is in your state. So your views
5 have been greatly appreciated by all the members of
6 the panel.

7 Chip, I would continue the praise for you.

8 I've had the good fortune to work with Chip in many,
9 many public meetings on many, many issues in many
10 places. He is always masterful at what he does. He
11 puts a great deal of care and interest into it and he
12 works very hard to be neutral, neutral, as a
13 facilitator. And he's very, very good at it and we
14 thank you for those efforts, Chip.

15 This is, to say the least, a challenging
16 issue. There are approximately today 700,000 metric
17 tons of depleted uranium that need to be disposed of.

18 There will be more depleted uranium coming down the
19 pike, presumably as much as on the order of 1.4
20 million metric tons if all of the commercial
21 enrichment facilities that are in play now under
22 consideration at license review are, in fact,
23 licensed. That represents a challenging, national
24 issue. It's extremely important then that what we are
25 wrestling with here is not only important to the

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1 citizens of Utah, to the local residents nearby, to
2 the country at large, a terribly important issue, and
3 your input is extremely invaluable in addressing that
4 issue.

5 This is the beginning of a regulatory
6 process to address the challenges that disposal of
7 large quantities of depleted uranium present. And I'd
8 like to leave you with one final, basic message. I
9 think that our colleagues, in particular, from Snake
10 River Alliance, from HEAL Utah, have touched upon this
11 several times. I think that there has been a great
12 deal of criticism levied about the fact that depleted
13 uranium is Class A waste by default. We have
14 certainly heard that loud and clear. It was expressed
15 to some degree in the public meeting in Maryland,
16 perhaps not to the same degree, but again, that's to
17 be expected. But I think there is a general
18 recognition that at the time the rule was put in place
19 and there was a default provision created, that that
20 caused us some challenges.

21 So the final message that I would like to
22 leave everyone with, and by the way, I do want to
23 thank the audience too. It's not easy to sit out
24 there for two full days and only have limited
25 opportunities to speak what's on your mind, so we

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1 regularly appreciate your patience and we greatly
2 appreciate all the commentary that you offered.

3 So the final message is this, the NRC
4 realizes the initial assumption made during the
5 development of the Part 61 waste classification table
6 that all radionuclides not limited on the table by
7 default are Class A waste may be viewed as a faulty
8 approach. That is not in any way to slight those who
9 worked on the rule at the time. They did not
10 envision, how could they? We are 30 years smarter now
11 than we were then. But nonetheless, it could arguably
12 be viewed as a faulty approach.

13 It was arguably erroneous, therefore, to
14 consider the waste streams considered in the Part 61
15 draft Environmental Impact Statement as being
16 sufficiently comprehensive such that a new waste
17 stream, i.e., large quantities of depleted uranium
18 would not arise in the future and be subject to this
19 default classification.

20 In order to correct this problem, the NRC
21 plans and is undertaking its normal stakeholder
22 process to do a formal rulemaking addressing
23 stakeholder concerns and evaluating technical and
24 legislative factors associated with the safe disposal
25 of large quantities of depleted uranium. The NRC

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1 believes this is the most prudent course to address
2 the existing waste classification issues associated
3 with depleted uranium and ensure that there is
4 adequate protection to ensure protection of the public
5 health and safety. The Commission has directed the
6 staff to do this in two parts: with limited
7 rulemaking which has been the subject of this
8 particular workshop, and later to look at risk-
9 informing the waste classification scheme in Part 61.

10 So we've embarked on a long journey, but
11 that is why we are doing it and that is the reasons
12 that we have started this process and all of you, as
13 panelists in particular, but also members of the
14 audience, have been and will continue to be a key part
15 of that process and we thank you for that.

16 MR. CAMERON: I wasn't going to say
17 anything, but as enjoyable as this has been for all of
18 us, we're probably looking forward to it coming to an
19 end, but in all fairness, we had someone come in who
20 was trying to be here for the 4:45 public comment
21 period, so I wanted to give her an opportunity to just
22 say something to all of us. And can you introduce
23 yourself?

24 MS. EFRAMO: Thank you very much. I got
25 lost. My name is Alexandra Eframo. I live at 3735

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1 Judd Circle in West Jordan. I have never been
2 married, don't have children, but I am frightened to
3 no end about nuclear waste. You allow a little bit to
4 come in, and then you allow a little bit more to come
5 in and a little bit more and Governor Huntsman was
6 adamantly opposed to Italian nuclear waste coming in
7 to Utah. Now our current governor is saying well, I
8 think we ought to look at the money.

9 You know, my mother died of cancer when I
10 was 7 years old. Okay, we don't know about Energy
11 Solutions. In the paper it's stated that the vats
12 that contain the nuclear waste is only going to be
13 good for a hundred years. Okay, I don't have children
14 or grandchildren, but what about our great, great
15 grandchildren? I am frightened to no end about that.

16 To say that the vats that contain the nuclear waste
17 are only good for a hundred years. What do we do in
18 80 years? Do we have new vats and then transfer that
19 nuclear waste into the other vats? I am frightened to
20 no end, not for me, but for all the million
21 generations to come.

22 I don't think the world is going to blow
23 up like many people advocate. We're going to be
24 around for a long time. And I am appalled at the
25 governor to say that well, okay, we can have \$1

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1 million a year from Energy Solutions to store the
2 nuclear waste. Look at the money we're going to have.

3 Hey, we can't solve cancer. That's our number thing.

4 We cannot, cannot put dollar amounts on nuclear
5 waste. Thank you very much.

6 MR. CAMERON: Thank you. And you have to
7 have an excuse. Did you get lost? Okay.

8 (Laughter.)

9 MR. DAMIAN: My name is Robert Damian.
10 I'm a graduate electrical engineer from the University
11 of Utah. I know a great deal about nuclear power
12 plants and nuclear issues. The depleted uranium issue
13 has been around since the first concentration of
14 uranium started in 1943. So it's not a particularly
15 big issue.

16 I have a written statement and the written
17 statement is this. All uranium is depleted uranium
18 except that uranium made for bombs and fuel rods. All
19 uranium in nature is depleted of the bomb-making
20 isotope of the years. This process is still going on
21 even in uranium that has been depleted even more by
22 man-made processes. This is the depleted uranium that
23 is the subject of these meetings.

24 Of all of the known dangers to human life,
25 any uranium or any kind is extremely low on the list,

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1 unless used in a military way. Just driving or even
2 walking to this meeting is statistically far more
3 dangerous. Most anti-nuclear material activists do
4 not tell people that they and all plants and animals
5 have always had built-in nuclear radiation. They also
6 do not tell you that all balance farm, lawn, garden
7 fertilizers, even organic ones, must have built-in
8 radioactivity. Some of them do not even know this.
9 Some do not want to learn this.

10 The activists also do not talk much about
11 the radioactivity that comes from space or the fact
12 that radon is delivered with your clean natural gas,
13 that it also comes right out of the ground in most
14 places in Utah and elsewhere, including the Salt Lake
15 Temple.

16 Those who smoke or drink alcohol or ride
17 motorcycles or allow the sale of smoking materials
18 have no reason to attempt to control the far, far
19 lesser dangers of depleted uranium storage. Depleted
20 uranium is not waste. There are nuclear reactors in
21 operation that use it and others have been invented
22 that can use it. The new processes that more
23 efficiently extract the short-lived life of isotopes
24 will be able to use it to produce fuel for any
25 existing nuclear reactor.

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1 Thank you.

2 MR. CAMERON: Thank you. And I think we
3 are adjourned now. And have a good evening.

4 (Whereupon, at 5:17 p.m., the workshop was
5 concluded.)
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