

Official Transcript of Proceedings
NUCLEAR REGULATORY COMMISSION

Title: Public Workshop to Discuss Potential
 Revisions to NUREG/BR-0204, Rev. 2,
 "Instructions for Completing NRC's Uniform
 Low-Level Radioactive Waste Manifest"

Docket Number: (n/a)

Location: Phoenix, Arizona

Date: Friday, March 1, 2013

Work Order No.: NRC-3098

Pages 1-183

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 PUBLIC WORKSHOP TO DISCUSS POTENTIAL REVISIONS

5 TO NUREG/BR-0204, REV. 2,

6 "INSTRUCTIONS FOR COMPLETING

7 NRC'S UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST"

8 + + + + +

9 SHERATON PHOENIX DOWNTOWN HOTEL

10 340 NORTH THIRD STREET, MEETING ROOM: PHOENIX A

11 PHOENIX, ARIZONA 85004

12 + + + + +

13 FRIDAY, MARCH 1, 2013

14 + + + + +

15 The above-entitled meeting convened,
16 pursuant to notice, at 8:11 a.m.

17
18 PANEL MEMBERS:

19 Paul Black, Neptune and Company, Inc.

20 Chip Cameron, Facilitator

21 Bill Dornsife, WCS

22 Don Lowman, U.S. NRC

23 Sean McCandless, Energy Solutions

24 Billy Cox, Electric Power Research Institute

25 Joe Weisman, US Ecology

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1 ATTENDEES (U.S. NRC):

2 Boby Abu-Eid, Senior Technical Advisor

3 Andy Campbell, Deputy Director, Office of
4 Enforcement

5 Larry W. Camper, Director, Division of Waste
6 Management and Environmental

7 Ester Houseman, Legal Intern

8 Jim Kennedy, Senior Project Manager

9 Chris McKenney, Branch Chief, Performance
10 Assessment

11 Aby Mohseni, Deputy Director, Division of Waste
12 Management and Environmental

13 Karen Pinkston, Systems Performance Analyst

14 Mark Satorius, Director, Office of Federal and
15 State Materials and Environmental
16 Management Programs

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ATTENDEES (Public):

Mahn Aziz, Federal Authority of Nuclear
Regulation, United Arab Emirates

Jhon Carilli, U.S. DOE

S.Y. Chen, Argonne National Lab

Cesar Costa, Industrias Nucleares Do Brasil

Lisa Edwards, EPRI

Sonny Goldson, EnergySolutions

Sarah Herness, Radwaste Monitor

Leslie Jardine, Dublin, CA

Thomas (Tom) Kalinowski, D.W. James Consulting

Ashok Kapoor, U.S. DOE

Mark Lewis, EnergySolutions

Todd Lovinger, LLW Forum

Rusty Lundberg, Utah Department of Environmental
Quality

Leigh Anne Methlie, Catholic University
of America, VSI & DOE

Clint Miller, Pacific Gas & Electric Company

Robert Petras, Savannah River Site

Joseph Rustick, Vanderbilt University

Roger A. Stigers, PPL Corportation

Linda Suttora, U.S. DOE

John Tauxe, Neptune and Company, Inc.

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1 Christopher J. Tubman, APS Palo Verde

2 Robert Vellinger, Sr., Terranear PMC, LLC

3 Aaron White, U.S. DOE

4 Perry Williams, Studsvik

5 Bill Wilmark, U.S. DOE

6 Charles Yu, Argonne National Lab

7
8 ATTENDEES (Webinar):

9 Michael Ault, US Ecology

10 Brad Broussard, Texas Commission on Environmental
11 Quality

12 Michael Carr, EnergySolutions

13 Diane Darrigo, Nuclear Information and Resource
14 Service

15 Maurice Heath, U.S. NRC

16 Matthew Hooper, WMG, Inc.

17 Vernon Ichimura, EnergySolutions

18 Graham Johnson, Duke Energy

19 Richard Lemons, Duke Energy

20 Michael Plemmons, South Carolina Dept. of Health
21 & Environmental Control

22 Loren Morton, State of Utah

23 Kristen Schwab, Washington Dept. of Health

24 Sandra Talley, U.S. NRC

25 Mark Tunnell, WMG, Inc.

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Facilitator Opening Comments.....	7
Panel Introductions.....	13
NRC Welcome.....	18
Panel Discussions.....	28
Facilitated Public Discussions.....	102
Closing Remarks.....	170

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P R O C E E D I N G S

8:11 a.m.

OPERATOR: Welcome, and thank you for standing by. At this time, I'll go to a listen-only mode. After the presentation, there will be a question and answer session.

To ask a question at that time, please press *1 on your touch tone phone. Then unmute your phone and record your name at the prompt. I would now like to turn the meeting over to Chip Cameron. You may begin.

Facilitator Opening Comments

MR. CAMERON: Okay. Thank you, Tracy, and welcome to all of those who are on the phone, and also we have some people who may be joining us on the webcast and the phones. Good morning, everyone. My name is Chip Cameron, and it's my pleasure to serve as your facilitator for today's meeting, and in that role I'll try to help all of you to have a productive meeting today.

Our subject is the reporting of certain radionuclides under the NRC's uniform manifest, and I'm going to leave it to others to pronounce the name of those radionuclides.

OPERATOR: I apologize, Chip. Your microphone is cutting in and out.

MR. CAMERON: It is cutting in and out?

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1 OPERATOR: It is.

2 MR. CAMERON: Okay. Ron, is it me or is it
3 the system?

4 MR. COULTER: I think we're working on it.

5 MR. CAMERON: Okay. So what do we -- what
6 should we do?

7 MR. COULTER: You just keep doing what you
8 do.

9 MR. CAMERON: Okay, thank you. I just
10 wanted to spend a few minutes on some meeting process
11 items before we get into the substance of today's
12 program, and I want to talk about the format for today's
13 meeting, go over the agenda with you and just a few notes
14 on some simple ground rules, to allow us to have a good
15 meeting today.

16 In terms of the format, we have panelists
17 with us today. In a few minutes, we'll go to them for
18 introductions. But they mainly represent the disposal
19 facility side of low level waste, and we're not only
20 interested in their views on these issues today, but
21 we're interested in getting their viewpoints on what
22 other people on the panel think about these particular
23 issues.

24 So we're going to have a discussion.
25 Basically, that's why we have the panel. In terms of the

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1 agenda, as soon as I'm done, we'll just have the panelists
2 introduce themselves briefly, and then we're going to go
3 to Larry Camper, who's the Division Director of the
4 Environmental Division at the Nuclear Regulatory
5 Commission, and he's going to tee up the issue for us.

6 After that, we will start our panel
7 discussion, and the first segment of the panel, we're
8 going to try to limit it to the discussion,
9 "Characterization of the Problem." What is the problem
10 that we're trying to address here? We'll have that
11 discussion. Then we're going to go to the audience for
12 questions, comment. There may be responses from the
13 panelists to those questions and comments.

14 And by audience, we have people here in the
15 room in Phoenix, and we have people on the phone who can
16 come in over the phone during that time, ask a question,
17 make a comment, and we can also have comments through the
18 webcast. Is that correct, Karen, and they'll give you
19 something and you'll bring that to me. Okay.

20 We'll take a break after that. We'll come
21 back for the second part of the panel discussion, and
22 that's where we're going to be talking about what are some
23 of the solutions to the problems that have been
24 identified, and do those solutions, do they all require
25 a revision by the NRC of the NUREG, or are there some

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1 things that the industry might be able to do to solve the
2 problem.

3 When we're talking about how we deal with
4 the problem, I think it will be useful to have some
5 discussion of the priority of solutions for the problem.
6 Some may be simpler than others; some might have down the
7 road consequences, unintended consequences that we want
8 to think about.

9 So that will be the subject of that second
10 part of the discussion. We'll go out to the audience
11 again, and then we'll adjourn. We're going to have some
12 closing remarks from Larry Camper around 12:45, I
13 believe.

14 MR. LOWMAN: Aby.

15 MR. CAMERON: Oh, by Don Lowman.

16 MR. LOWMAN: No, Aby.

17 MR. CAMERON: Oh, by Aby, that's right.
18 Aby Mohseni is with us, and Aby, why don't you just
19 introduce yourself to us now, since you're not up here.

20 MR. MOHSENI: I'm Aby Mohseni. I'm the
21 Deputy Director for the Division of Waste Management and
22 Environmental Protection in NRC.

23 MR. CAMERON: Okay. Thanks, and I should
24 go to the person, the puppet master who's back here
25 pulling all the strings on the NRC people. But this is

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1 the Office Director. Mark, please introduce yourself.

2 MR. SATORIUS: Hi. I'm Mark Satorius, and
3 I'm the Director of the Office of Federal and State
4 Materials and Environmental Management Programs, and I
5 have the second longest title in the NRC.

6 MR. CAMERON: Okay. Thanks, Mark. Thank
7 you, Aby. We'll have closing remarks by Aby, and then
8 we'll adjourn for the day.

9 In terms of ground rules, all the panelists
10 have a name tent in front of them, and even with the few
11 people we have on the panel, I think it might still be
12 good, if you want to say something, if you could just turn
13 this up. Billy, I see you've already smashed your name
14 tent. But I think it will still work, okay. So --

15 MR. COX: Actually, you smashed it.

16 MR. CAMERON: I did it. Okay. We already
17 have a controversy. At any rate, turn your name tent up,
18 and I'll know that you want to say something. I may not
19 take the name tents in order so that we can follow a
20 discussion thread. That's one of the most important
21 things in having these types of panel discussions, is to
22 be able to follow the discussion threads as much as we
23 can.

24 I may ask you questions, clarifying
25 questions about what you've said, for everybody's

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1 benefit. If we have issues that come up that really may
2 be part of solving the problem, for example in this first
3 discussion, I'll keep the so-called parking lot of those
4 issues to come back to at the appropriate time.

5 And we don't have -- we do have some state
6 representation in the room. The states obviously are
7 going to have important things to say on this issue.
8 They probably will be on the phone. So I want to make
9 sure that we pay attention to who's on the phone, so that
10 we can hear from the states.

11 We do have NRC staff members in the
12 audience, and we also have Don Lowman on the panel. The
13 NRC staff will be here to, as a resource, to give you
14 information on NRC process, perhaps. But more
15 importantly, they may hear ideas that you suggest. They
16 may ask you questions about that relate to the
17 feasibility of implementing those ideas.

18 But Don is the laboring oar for the NRC on
19 that, so we'll look to him for that. We have Delores
20 Gonzalez with us this morning. She is our court
21 stenographer, and we're taking a transcript of the
22 meeting, and that will be the NRC's record and your record
23 of the meeting.

24 But it means that we do need to speak into
25 the microphones, so that Delores can pick that up, and

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1 after a while, she's going to know who at the panel is
2 speaking. But when we first start our panel discussion,
3 if you could just give your name, so that Delores knows
4 who's talking.

5 Of course, when we go to the audience or to
6 the phones, I'm going to ask you to give your name and
7 affiliation, if that's appropriate.

8 And for those of you here in the room, the
9 restrooms are that direction, and to the left and there
10 is a golf cart or a bus that's going to take them down
11 this huge lobby. Is that correct? Okay. But I think
12 you probably have heard enough from me at this point and
13 Larry, I didn't, I should have asked you before.

14 Larry Camper is going to give us a tee up,
15 and I want to have the panelists introduce themselves
16 first. But do you want to take any questions, Larry,
17 before we launch into the panel?

18 MR. CAMPER: If there's something to
19 clarify, that would be fine.

20 Panel Introductions

21 MR. CAMERON: Okay. If we have a
22 clarifying question for Larry, we'll take it then. But
23 why don't we start with the NRC. Don.

24 MR. LOWMAN: Yeah, hi. I'm Don Lowman, a
25 project manager with the NRC. I guess I'm one of the

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1 puppets Chip was talking about. But this is my project,
2 so I'll be gathering all the information and asking
3 questions on it.

4 MR. DORNIFE: I'm Bill Dornsife,
5 Executive Vice President of Licensing at Waste Control
6 Specialist, and we are in the process of developing and
7 updating a very sophisticated performance assessment,
8 which is going to be extremely important in terms of the
9 waste that we can receive in the future. We are very much
10 in tune with what NRC is proposing for its site-specific
11 performance assessment.

12 So obviously, the reporting of these
13 radionuclides are extremely important to us, because
14 we've seen a wide range of values that just don't make
15 any sense, particularly for iodine-129.

16 To give you a little historical
17 perspective, in a previous life I was a state regulator,
18 very much involved with the compact process, and we had
19 a group called the Host State Technical Coordinating
20 Committee, and the issue of iodine-129 came up in that
21 setting, you know, because it was even more over-reported
22 back then. It was just off the charts.

23 And you know, that we tried to address it
24 by a computer program, which I don't think any people are
25 using. But it's not, certainly not a new issue.

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1 MR. CAMERON: Okay, thanks Bill. Joe.

2 MR. WEISMAN: Good morning. I'm Joe
3 Weisman. I'm Director of Radiological Affairs for U.S.
4 Ecology. We run the Northwest Compact Class A/B
5 facility on the Hanford Reservation in Richland,
6 Washington. This topic is near and dear to our hearts
7 because we're one of the few sites so far that's actually
8 gone through a full environmental impact statement,
9 which is essentially a performance assessment for our
10 site.

11 We have license limits for all of these
12 Phantom 4 nuclides, three of which are life of facility
13 limits and total curies, and the other is an annual limit
14 for our tritium. So more that these nuclides are
15 over-reported on manifests, the more inventory that is
16 taken away from the lifetime capabilities of our
17 facilities.

18 So we're certainly open to wanting to see
19 some improvements on how the generators can handle these,
20 and perhaps some better guidance, some language on how
21 10 C.F.R. 20 Appendix G requirements are implemented by
22 the generators and the disposal facilities.

23 MR. CAMERON: Thanks, Joe, and Billy.

24 MR. COX: My name's Billy Cox. I'm a low
25 level waste project manager for the Electric Power

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1 Research Institute. I've worked in radiation
2 protection and low level waste for a very long time.
3 I've been a qualified hazardous materials, radioactive
4 materials shipper.

5 So I am intimately familiar with waste
6 sampling classification, characterization and EPRI
7 Research has confirmed other research that's been out
8 there, including independent research, DOE research and
9 NRC research, such that these nuclides are being
10 over-reported.

11 It's questionable what the disposal site
12 actually does with the numbers that are manifested.
13 There's no requirement in guidance as to whether they
14 treat them as a real number or not. It's my
15 understanding that some do and some don't. But by
16 treating these as a real, the detection limit value as
17 a real number, we're biasing the site inventory
18 significantly high.

19 And if, by the same token, if you leave it
20 out, you essentially set it to zero, you'd be biasing the
21 site inventory to the low side, although it's much more
22 significant to be using these detection limit values as
23 real numbers.

24 That's something that we think that the
25 guidance needs to be changed, such that it gives us a more

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1 accurate representation of what the site inventory is.

2 MR. CAMERON: Okay. Thank you. Billy and
3 Sean.

4 MR. McCANDLESS: Sean McCandless with
5 Energy Solutions, Clive Facility. I do the compliance
6 and licensing for the facility, and work with the
7 performance assessments, translating that into the
8 license conditions.

9 We too are impacted by the Phantom 4. Our
10 license has activity limit, a concentration limit on two
11 of the four, and so we're very interested in the
12 conversation today.

13 MR. CAMERON: Okay, thanks Sean, and Paul
14 Black has joined us, our final panelist, and we're just
15 going through brief introductions now, Paul, and this is
16 Paul Black from Neptune, and we'll be hearing from him
17 during the discussion.

18 MR. BLACK: Do you want me to say something?

19 MR. CAMERON: Can you at this point? Do
20 you want to? You don't have to say anything, but if
21 you're still sort of gathering your thoughts together.

22 MR. BLACK: Sorry, about that. So Paul
23 Black with Neptune and Company. So I guess with Billy,
24 we're looking at LLD issues, which seems relevant for
25 manifesting. Is that good?

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1 MR. CAMERON: All right, thank you, and
2 with that, Don, I think when we get done with Larry's,
3 maybe we'll put the issues up then, before we get into
4 the discussion. With that, we look forward to a great
5 discussion, not only between the panelists but between
6 all of you here and the phones, and this is Larry Camper.

7 NRC Welcome

8 MR. CAMPER: Thank you, Joe. Good
9 morning. I am Larry Camper, the Director of the Division
10 of Waste Management and Environmental Protection.

11 Most of you know me, but for the record,
12 that's who I am within the Office of Federal and State
13 Materials and Environmental Management Programs, and you
14 know, Chip pointed out that Mark Sartorius is here, and
15 I want to comment that Mark has been with us all week,
16 and he is the office director.

17 This is a busy guy. There's over 200 people
18 in our office, a wide-ranging program. But being with
19 us all week shows the level of interest that Mark has in
20 waste issues, and he and I often talk about waste
21 challenges that we face. Mark, it's great to be with us
22 all week. Thanks for that.

23 Aby, my deputy on the environmental side,
24 will give the closing remarks, and share with you what
25 I often refer to as what were the "aha moments" during

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1 our deliberation today. So hopefully, there will be a
2 lot of aha moments.

3 I want to thank the staff, Karen Pinkston.
4 Dr. Pinkston is working there with us, and Jim Kennedy
5 in the back and Don, and these things don't just happen.
6 The staff works long and hard to bring it all together.

7 So I appreciate that hard work, and I want
8 to thank the panelists ahead of time. We've got quite
9 a group here, a lot of practitioners who deal with large
10 quantities of waste every day, deal with waste every day
11 and you know this stuff very well. I thank the audience
12 for being here, and I know that during the course of the
13 day, you'll have lots of good input for us as well.

14 So Don, are you controlling the slides or
15 am I controlling the slides?

16 MR. LOWMAN: You are.

17 MR. CAMPER: So I can do it right here?
18 Okay. So let me, for the record then, frame the issue
19 that we're going to deal with today, so that everyone here
20 and those listening in will understand the issue we're
21 going to address.

22 Our regulations in Part 20, 10 C.F.R.
23 Appendix G, entitled "Requirements for Transfers of Low
24 Level Radioactive Waste Intended for Disposal at
25 Licensed Land Disposal Facility Manifest," requires that

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1 an NRC uniform waste manifest -- requires that a uniform
2 waste manifest, which are shipping papers which identify
3 the container and the waste description, be prepared for
4 waste intended for ultimate disposal at a licensed low
5 level radioactive waste land disposal facility.

6 The waste generator, collector or
7 processors who transports or offers for transportation
8 low level radioactive waste, must prepare the manifest
9 reflecting information requested on the applicable NRC
10 forms.

11 Per Appendix G of Part 20, the shipment
12 information should include on the uniform manifest for
13 the waste shipment the activity of each of the
14 radionuclides of tritium, carbon-14, tech-99 and
15 iodine-129 contained in the shipment.

16 So that is the technical issue that we'll
17 be looking at today, and we have a NUREG document,
18 NUREG/BR-0204 Rev 2, entitled "Instructions for
19 Completing NRC's Uniform Low Level Radioactive Waste
20 Manifest," that sets forth the information that is used
21 by the industry to fulfill the regulatory requirement
22 that I just cited for you.

23 Now with regard to today's gathering, we
24 unfortunately, due to budget constraints, we'd like to
25 have had some agreement state people here. We have Rusty

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1 Lundberg here from Utah and maybe others in the audience,
2 but we normally would like to try to bring agreement state
3 colleagues into these types of discussions, or for that
4 matter advocacy groups or concerned stakeholders.

5 But we just couldn't do it at this point in
6 time. I think all of us are acutely aware of where we
7 stand on some of the budget issues today. But we are
8 going to have -- we are having a webinar. We'll have some
9 future outreach activities, which I'll describe in a
10 moment.

11 So hopefully we'll be able to adequately
12 involve the comments and views of our colleagues in the
13 Agreement States and other people who have concerns about
14 the business that we go about conducting every day.

15 So this issue came up a lot during the
16 discussions that we had around the ongoing rulemaking
17 dealing with the site-specific performance assessment,
18 and also we've been out interacting around another SECY
19 paper, 10-0165, in which the Commission had asked the
20 staff to look at the possibility of a comprehensive
21 revision to Part 61.

22 So in the course of those public meetings,
23 this issue came up several times, and the issue deals with
24 these four isotopes. There's another one also,
25 chlorine-36, that are difficult to measure, DTM. We

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1 refer to them lovingly as the Phantom 4. The DTM
2 activities may be overestimated, as low level detection
3 values on a manifest is required if the DTM isotopes are
4 detected below the low level of detection.

5 So this probably, and the staff felt was an
6 important problem, because what we heard again and again
7 from practitioners is that we're overestimating the
8 amount of activity that goes into the site for disposal.

9 Therefore, the Curie content is being
10 overestimated, and has an impact on how much waste the
11 site can receive over the course of its operation and so
12 forth. Therefore, these sites may close prematurely as
13 a result of this overestimation of activity.

14 I did mention that the chlorine-36 also came
15 up in addition to the Phantom 4. I believe Bill Dornsife
16 from the WCS brought chlorine-36 up several times. So
17 we'll talk about that particular isotope as part of this
18 process today as well.

19 So what do we do? What do we do? This is
20 a kind of topic that we thought was ideal for an expert
21 panel like we assembled today. It's a technical
22 problem. Yes, it is embodied within a regulatory
23 requirement, and one can argue that it's a regulatory
24 problem or a policy problem.

25 But it really manifests itself as a

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1 technical issue. So we thought this type of gathering
2 or this type of panel was an excellent opportunity to
3 address the problem. So what do we do? Do we take steps
4 today to ensure that there are ways to better determine
5 the lower level of detection? Billy Cox and I were
6 having a conversation before we got going.

7 The process that's embodied within the
8 guidance document is very old, is very outdated. A lot
9 of things have changed in terms of detection capability
10 since the day that guidance was put together. Can the
11 sites or states change how they report the manifest data?
12 Is it merely some sort of accounting problem that could
13 solve this, and how we report the findings?

14 Provide reporting guidance in our
15 site-specific analysis rulemaking. We owe the
16 Commission a proposed rule in July of this year. That
17 rule will have extensive guidance associated with it, to
18 inform the licensee, the site operators how they go about
19 conducting a site-specific performance assessment.

20 Could we do more in that guidance to address
21 this issue? Should we, as an alternative, revise
22 NUREG-0204, the reporting requirements, and how you go
23 about fulfilling those reporting requirements? Do we
24 need to revise Part 20? Is the requirement itself a
25 problem?

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1 Obviously, when you start talking about
2 revising Part 20, you begin to appreciate the amount of
3 time it takes, the steps in the process that it takes.
4 Is it really worth doing that? But it's a question.
5 It's a fair question.

6 Try to establish better accounting
7 techniques. As I said a moment ago, things have changed
8 a lot in terms of the equipment and detection
9 capabilities that we use today in our industry. So there
10 are accounting techniques that we could use. Assaying
11 the samples longer is a simple example, and so forth.
12 Are there others?

13 So with those as a backdrop, as
14 possibilities, we do look forward to the discussion that
15 you'll have today, and we believe you're well-positioned
16 to help us address this issue.

17 In terms of the path forward, we're having
18 this workshop today obviously. We're going to have
19 public webinars with a state-focused public webinar
20 tentatively in April, and we want to have a
21 stakeholder-focused webinar probably in May of this
22 year.

23 We'll publish a draft. Whatever that comes
24 out of this process, we'll publish a draft and put it out
25 there so people can react to it. We'll have a public

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1 meeting or webinar most likely sometime in the summer,
2 early fall, and then of course we'll proceed to finalize
3 the adjustments that we're going to make, whether it be
4 to the NUREG most likely, or whatever else it is that we
5 come up with as a result of this process.

6 So with that as a backdrop, if you have any
7 questions of a clarifying nature.

8 MR. CAMERON: Any questions for Larry about
9 the process or schedule at this point? Anybody on the
10 panel, first?

11 (No response.)

12 MR. CAMERON: Okay. Let's go to the
13 audience for a clarifying question. Clint. Introduce
14 yourself.

15 MR. MILLER: Clint Miller, Pacific Gas and
16 Electric Company. Larry, in your one slide, I believe
17 it said "may use LLDs," and I believe in the NUREG it says
18 "these quantities must be recorded."

19 MR. CAMPER: Well, you're right. The
20 guidance does say must, that's right. The guidance is
21 written more like a regulation frankly than it is
22 guidance, and we do do that sometimes. We try not to,
23 but it's old and sometimes we do it. But you're
24 absolutely right, Clint. You're absolutely right, and
25 clearly, we'll fix that as part of this process.

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1 MR. CAMERON: Okay, thanks. Thanks,
2 Larry. Thank you, Clint. Yes? Okay. Please just
3 speak closely into your microphones, so that the people
4 on the phones and webinar can hear you. There is a
5 question? Let me -- are these people still on the phone,
6 do you think? Tracy?

7 OPERATOR: Yes.

8 MR. CAMERON: Does someone on the phone
9 have a question, a clarifying question for Larry Camper?

10 OPERATOR: To tell you the truth, I did not
11 hear his question, but I can let people know to dial *1
12 if you have a question or a comment. You guys are cutting
13 in and out really bad. That hampers the conference, I
14 think.

15 MR. CAMERON: I think we're going to try to
16 solve that by just making sure that we speak directly into
17 the microphone. I think Larry's lavalier is probably
18 cutting out. But anybody have a clarifying question for
19 Larry Camper on the phone?

20 (No response.)

21 MR. CAMERON: Okay, and Karen --

22 OPERATOR: At this time, there are no
23 questions or comments.

24 MR. CAMERON: Okay, thanks Tracy. You say
25 you do?

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1 OPERATOR: No, I do not have any questions
2 or comments at this time.

3 MR. CAMERON: Okay, thanks Tracy, and do
4 you want to read it to us?

5 MS. PINKSTON: This question is coming in
6 through the webinar, and the question is what is the
7 target date for the final guidance?

8 MR. CAMPER: Repeat the question?

9 MR. CAMERON: Did you hear that, Larry?

10 MR. CAMPER: What's the question?

11 MS. PINKSTON: What is the target date for
12 the final guidance?

13 MR. CAMPER: Do you know?

14 MR. CAMERON: What is the target date for
15 the final guidance?

16 MR. CAMPER: We don't have a precise date
17 do we? We don't have a precise date. As I said in my
18 remarks, we'll be holding two webinars in May, excuse me,
19 April and May. We'll get a draft document out and we're
20 also going to have a public meeting later this summer.
21 But we don't have a target date as such yet, no exact date.

22 But I would presume it would be something
23 along the lines of toward the end of this year, maybe
24 early next year.
25

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1 Panel Discussions

2 MR. CAMERON: Okay. Thank you, Larry, and
3 let's go to our panel now for discussion, and I'm going
4 to go to Don Lowman first, who has come up with some issues
5 that we're not going to rigidly try to go down the list
6 and answer, but just some thought-provoking issues for
7 your thought. And Don, why don't you go ahead and talk
8 about that?

9 MR. LOWMAN: Yeah. I'm Don Lowman. We'll
10 be getting to topics in a bit. I'm here to ask questions
11 and listen, so you know, I'll ask questions during the
12 panel. I did want to -- this is my first time
13 representing the NRC in front of an audience. I want to
14 kind of introduce myself.

15 I started my career, after I got out of
16 college, Virginia Tech, went down to H.B. Robinson. I
17 was an HP technician in the Rad Waste Division. So I
18 packaged waste, prepared shipping papers, loaded casks,
19 surveys, everything. So that it gave me a really good
20 groundwork for managing radioactive waste.

21 From there, I went down to Jackson,
22 Mississippi, worked for Mississippi Power and Light, the
23 Grand Gulf Station. I was actually the rad waste
24 supervisor at Grand Gulf for about six months, and I
25 believe I probably made the first radioactive waste

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1 shipment out of Grand Gulf, and we were part of Mid-South
2 Utilities, which included ANO in Waterford, and we had
3 a rad waste group.

4 John Etheridge, I worked with John
5 Etheridge a lot. I hear he's retired now, but and from
6 there, I went to Dominion, which was Virginia Power at
7 the time.

8 I was in the corporate Health Physics
9 office, and I provided support to North Anna and Surry,
10 attended EEI UWASTE meetings, compact meetings, the rad
11 waste studies of other utilities, you know, to lower our
12 waste volume.

13 So I'm very familiar with waste, and then
14 towards the end of my career there at Dominion, I was just
15 getting a little disenchanted with nuclear power. So I
16 decided to switch careers. I got into IT, did that for
17 a while. Worked as a QA manager at a Fortune 500 company
18 in Richmond.

19 When the recession hit, they went out of
20 business. So I probably two years prior to that, I'd
21 looked to getting back into nuclear power. Because of
22 the nuclear renaissance, I wanted to get back in. So I
23 applied with the NRC but prior to being accepted at the
24 NRC, I did a refueling outage down at Millstone. I was
25 a site coordinator for Bartlett, and once I finished that

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1 job, I started with the NRC and I've been the Low Level
2 Waste Group since then.

3 Worked on the volume reduction policy
4 statement, and I'm working on, excuse me, the BTP also.
5 I do want to say, you know, having sat out there before,
6 I'm very impressed with the people at the NRC, the
7 knowledge level there.

8 It's a very collegial atmosphere, and I know
9 sometimes you see drafts of these documents and you're
10 like wow, you know, this is way off base. But you know
11 it's really all part of the process. We go out for public
12 comment.

13 We do listen to the comments. I can tell you,
14 working with Jim Kennedy on these BTP issues, we have
15 meetings two or three times a week, and there's hundreds
16 of responses to go through.

17 We go through every one, and there's four
18 or five people in the meeting and we go through every one,
19 and if we can't resolve it, we come back to it. But you
20 know, it's a living document for a while and it changes
21 for the better, and I think, you know, the BTP is a good
22 case. But I'm impressed with the NRC.

23 MR. CAMERON: Okay, and these are some of
24 the topics of, that might be right for conversation on
25 this, okay.

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1 MR. LOWMAN: Right.

2 MR. CAMERON: And we heard Paul mention
3 already LLDs. Do you want to just click on that and show
4 people what's behind the LLDs? Proper LLD values,
5 summed to meet manifest requirements, how to get
6 generators to use more consistent standards for
7 developing LLDs, how to estimate concentrations at below
8 the LLD.

9 Why do some burial sites include LLD values
10 in our inventory and other sites don't? If an LLD is
11 reported using zero for inventory purposes, good enough.
12 I suppose that we might want to tell people what that
13 acronym means, LLDs. Can we do that?

14 MR. LOWMAN: You don't know, Chip?

15 (Laughter.)

16 MR. CAMERON: I'm not going to help you out
17 with that one. You just went through this impressive
18 encapsulation of your career, but don't ask the
19 facilitator.

20 MR. LOWMAN: Lower Limit of Detection.

21 MR. CAMERON: Okay, thank you. I read
22 those. For some people who are on the phones are not on
23 the webinar. So they don't have the benefit, I don't
24 think, perhaps not of the slides. But can we go back to
25 the main list, Don? Thank you.

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1 Okay. Topics, characterize the issues,
2 LLDs. What are some potential revisions to
3 NUREG/BR-0204? Do we want to click on that? Align the
4 NUREG with Part 20, Appendix G by including processors
5 in the certification statement. Update Form 542 to
6 identify the original generator, even when attribution
7 is solely the processors, as some states desire this.

8 No revisions needed to the NUREG. Can we
9 accomplish the objective in other guidance, perhaps
10 guidance associated with the Part 20 rulemaking? Okay.
11 Let's come back to the main list, Don. Some other ideas.
12 Improve sampling and counting. Reconsideration of use
13 of generic scaling factors. How to include Cl-36 in the
14 revisions, and any other ideas.

15 And as I said, these are just ideas for
16 topics, and at any point during the panel discussion, if
17 you want us to go in-depth to the LLDs or potential
18 revisions, we can do that.

19 So why don't we get started, and maybe one
20 place to start is with some comments that Joe Weisman and
21 Billy made in the introduction about what do the sites
22 do with the information on these radionuclides that are
23 reported?

24 Joe indicated what they do with that, and
25 I'm going to ask him to expound on that a little bit, and

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1 Billy said that, noted that some sites, they take
2 different approaches to what they do with them. So does
3 it make sense to have a discussion of this issue first?
4 Okay, and Joe, why don't you go ahead?

5 MR. WEISMAN: Okay. At US Ecology,
6 Richland, Washington, it is our policy that we enter the
7 information on the manifest as they come in. So we do
8 record the LLD values that are on the manifest, if they're
9 included into our inventory.

10 I'm not sure if we've approached the state
11 of Washington about an interpretation on that policy.
12 It's just, it's been something that we've always done,
13 and it's our status quo. I'm not completely sure where
14 we are versus our inventory limits for each of those
15 nuclides. But that's something I could find out and
16 supply to the group, if anyone is interested.

17 As far as some of the revisions to the NUREG,
18 since the information in Subpart G, I'm sorry, Appendix
19 G in Part 20, it's very generic, and it seems like all
20 of the information to the generators is provided in the
21 NUREG.

22 So and the language that the NRC chose to
23 put into the NUREG is rather terse, and it reads as if
24 it's a requirement, and being risk-averse as generators
25 and all licensees tend to be, because none of us want to

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1 be subject to a violation, there isn't much room for
2 interpretation as how this NUREG is written.

3 It almost forces the generators to use the
4 LLD values as real numbers, and in turn forces us at the
5 disposal sites to record these numbers, if that is our
6 policy, into our inventories.

7 I would like to see some more flexibility
8 in how the guidance is written, so that if a plant is using
9 scaling factors instead of what information they get from
10 a laboratory, there should be something in here, I think,
11 to allow them to record a number that is reasonable for
12 their plant or for their facility, that is scaled off of
13 a very reliable number from cobalt-60 or another nuclide
14 that shows up all the time, so that an actual number that
15 is more reasonable for that plant can be used.

16 That way, they're not -- they can also take
17 advantage possibly of some of the other guidance in the
18 NUREG, say for significant nuclide evaluations, for
19 nuclides that are there, less than one percent, you don't
20 have to record them on the manifest. Well, an LLD is an
21 estimated value, the significant determination doesn't
22 apply.

23 MR. CAMERON: Okay, and Joe raised another
24 aspect of characterization of the problem, which is the
25 lack of flexibility in the NUREG for how a generator will

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1 report, and I'd like to talk about that. But let's get
2 some other, just find out some other information on how
3 other sites besides US Ecology use these numbers that
4 come in. Bill?

5 MR. DORNIFE: Yeah. WCS more recently
6 was authorized by our state regulators to zero a
7 radionuclide that is reported as MDL. Now a performance
8 assessment focus, I don't know whether that's
9 appropriate.

10 To be honest with you, I mean that seems to
11 be one of the focuses of the meeting, is zero clear
12 enough, and if it is clear enough, what radionuclide is
13 it good enough for?

14 This issue came to the fore for us when we
15 were looking at some process resins that came in, and
16 these resins were Class C based on iodine-129. If you
17 believe the number, it was two percent of the core
18 inventory, which is totally outrageous.

19 So we went back to the processor and traced
20 back to the generator, and not only did the generator have
21 an extremely high LLD; he didn't report it as an LLD on
22 the manifest, and it got, you know, carried through to
23 the manifest that finally came to us.

24 So in the process of looking at that, and
25 these are all utility folks, who are obviously going

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1 through this processor. We saw a number, believe it or
2 not, five orders of magnitude in LLDs that various
3 utilities use.

4 Now I think my opinion is that issue could
5 be solved very easily by, you know, NRC when they go out
6 and do their inspections, they establish the standard or
7 maybe INPO establishes a standard, that people need to
8 meet, you know, the best possible LLD for these
9 particular radionuclides.

10 MR. CAMERON: Okay, thanks. Thanks, Bill
11 and let's go to Billy.

12 MR. COX: Billy Cox. Well, I guess let me
13 -- you're going to hear a lot of acronyms thrown around
14 here, and for the purposes of this discussion, they're
15 all synonymous. Lower limit of detection, minimum
16 detectable activity, minimum detectable concentration
17 or MDL, minimum detection limit. Bill? Method
18 detection limit.

19 Okay, so -- I mean there's also a detection
20 limit and critical level and things like that. But for
21 the purposes of this, the guidance drives the users, the
22 licensees to the documentation by Currie, which is the
23 same formula that is in the off-site dose calculation
24 manuals.

25 They refer to it as LLD. So for the

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1 purposes of this discussion, I'll refer to it as that as
2 well. The 1983 Branch Technical Position established a
3 standard for how hard you have to look, and for the Table
4 1 nuclides that we're talking about, it's one percent of
5 the table, which is one percent of the Class C limit.

6 So that's your *a priori* or before the fact
7 LLD that you're required to count to, which means that
8 it's ten percent of Class A. Now a lot of the generators
9 or licensees, in the absence of providing a laboratory
10 with other guidance, that's what they established their
11 counting times for, based on their efficiencies and their
12 backgrounds.

13 Some licensees may ask for lower numbers,
14 and in some instances, using radiochemistry, achieving
15 lower LLD values is possible. In other instances, it can
16 become very impractical using radiochemistry analysis
17 techniques, because you would have to count for an
18 extremely long time, you know. It could be days,
19 depending on how low you want to look and how close you
20 want to come to reality of the presence of tech-99 or
21 iodine-129 in the samples.

22 Now this counting issue is really more
23 specific to only technetium-99 and iodine-129.
24 Carbon-14 is not that hard to detect, and the
25 concentrations that are present tend to be higher. So

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1 you know, there is a standard of what you need to count
2 to. That standard is actually mirrored in the
3 manifesting guidance. The same required value that you
4 have to look for is in this NUREG now.

5 Perhaps I've talked to several of the
6 laboratories, and perhaps it would be possible to use
7 radiochemistry without impractically long count times,
8 and count to a factor of ten lower. But beyond that, it's
9 probably impractical using radiochemistry to do that.

10 So what these nuclides, they're required to
11 be manifested by Part 20 in Appendix G, and they're very
12 important, especially technetium, carbon-14 and
13 technetium-99 and iodine-129, to the performance
14 assessment. They're highly mobile, and they're
15 extremely important to getting the performance
16 assessment right, to get it accurate.

17 So our research and other research, EPRI's
18 research and other research indicates that using the LLD
19 values in the site inventory as real numbers
20 significantly biased the site inventory high, and
21 performance assessments aren't based on concentrations;
22 they're based on the total activity in the disposal site.

23 By the same token, and there's a lot of
24 guidance on why it's not appropriate to use this value
25 as a real number. These values, all in LLD, and Paul

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1 Black can probably correct me if I'm wrong, but all the
2 LLD value that we're using today from Currie's method
3 tells us is that I'm 95 percent sure that there's no
4 activity there below this number. Other than that, it
5 has no meaning in as far as real numbers go.

6 So reporting that as a positive value biases
7 the inventory, site inventory high, and it impacts the
8 capacity of that disposal site to safely dispose of
9 waste, which disposal is preferred over storage. It
10 impacts the capacity at the disposal site to take waste,
11 because they're using a number that's artificially
12 inflated, and that affects the performance assessment.

13 It doesn't take a lot of tech-99 to
14 adversely impact a performance assessment. By the same
15 token, reporting the value as zero while perhaps having
16 less of an impact, is also not really an accurate way to
17 do it either. There is a lot of research that's been done
18 by PNNL, and documented in NRC documentation, and a lot
19 of research by EPRI, that indicates that there is a basis
20 for, you know, constant scaling factors.

21 So maybe it's a combination of how hard you
22 have to look, and if you get an LLD value, it may be more
23 appropriate to manifest a real number based on the
24 scaling factor, than it would be to call it zero. Now
25 the guidance does not provide any information to a

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1 disposal site, to my knowledge, of what to do with the
2 value.

3 It's just incumbent upon the shipper to put
4 the value on the manifest. In different states
5 licensees have come to agreements about what they do with
6 that number.

7 MR. CAMERON: So on that last point, Billy,
8 the NUREG doesn't really give any guidance to the
9 disposal site on what they're supposed to do with the
10 number.

11 MR. COX: That's correct. That's my
12 understanding. There may be other guidance out there,
13 but I don't believe there is.

14 MR. CAMERON: Okay, and we've heard from --

15 MR. COX: Unless, unless it's specific to
16 a license or something like that in a state. But as far
17 as NRC guidance goes on what to do with the numbers on
18 the manifest, there's no other guidance out there.

19 MR. CAMERON: Okay, and we're going to go
20 to Paul and just to sort of sum up where we are so far.
21 We heard from Joe that they accept these numbers and they
22 put them in as they're reported to them. Bill said that
23 they treat them as zero, and I'm sure there's a lot more
24 behind that, and --

25 MR. DORNISIFE: Just to clarify. On the

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1 waste we've been receiving, where it's being reported as
2 zero, from the standpoint of the PA, you have to use
3 obviously some other source term, because you can't
4 under-report the data and say that's what you're going
5 to be receiving in 35 years. So the legacy stuff is
6 really in historic source terms we have to use.

7 MR. CAMERON: Okay. Thank you for that
8 clarification, and I think we've heard some comments that
9 get us to focusing on what the generator does, how much
10 flexibility there is for the generator. Best possible
11 LLDs and Billy got us into the radiochemistry, and I think
12 this is an appropriate time for Paul to talk about some
13 of this. Paul.

14 MR. BLACK: Well, I'll make a couple of
15 comments on that Billy said. One is LLDs and what they
16 are, and maybe somewhere in the guidance something should
17 be written about this, instead of people having to go back
18 to Currie's paper. Currie's paper is probably rather
19 dense for a lot of people.

20 But LLDs, he came up with the term, because
21 he needed a new term. The reason he needed a new term
22 is the statistical methods that he used to calculate an
23 LLD are different than the statistical methods he used
24 to calculate an MDA or an MDL.

25 So there is a difference between them, and

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1 I wonder listening to some of the conversation here about
2 lapse reporting LLDs over five orders of magnitude, if
3 part of the problem is that they don't know how to
4 calculate an LLD. Maybe, maybe not. I don't know.

5 But I'm very surprised to hear those sorts
6 of orders of magnitude. But LLDs are different. The
7 definition should probably be somewhere other than
8 Currie's paper.

9 One other issue here is in 204, what we're
10 doing with LLDs across samples is we're adding them up.
11 Adding or summing is essentially the same process as
12 average, and an average is a sum divided by N. So the
13 sum is there. It's the same idea. If you go back and
14 read Currie's paper, and Currie clearly understood all
15 of this very well, Currie said don't, you can't average
16 LLDs.

17 If you do, you're doing something where you
18 don't know what the answer is, and at the very least
19 you're biasing. It's all there in his paper. His
20 intention was never that people would add up LLDs. But
21 that's what's currently in the guidance. So I think
22 that's something that has to change.

23 So that's just our perspective on things,
24 just reading through Currie's paper. Well, I'll stop
25 there for now, but there's other things that we can talk

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1 about later about how can we improve on this process.

2 MR. CAMERON: Okay. Just for everybody's
3 edification, can you tell us who Currie is and what the
4 paper is that you're mentioning?

5 MR. BLACK: So Lloyd Currie was contracted
6 by NRC it looks like in the late 70's probably, early
7 80's, and I think his paper is 1982. His paper is the
8 basis for everything that is in the guidance and the
9 approach to calculating LLDs.

10 The issue really here -- so and really Lloyd
11 Currie wrote a great paper. All the information is in
12 there. The issue at the end of the day is he was
13 contracted to come up with a method for a detection limit,
14 and he came up with a new statistical approach to doing
15 it, so he gave it a new name. So it's Lower Limit of
16 Detection.

17 He actually lists about a dozen different
18 detection names in his paper, and if you ever go on
19 Wikipedia and search for detection limits, you'll find
20 about 40 of them. There's lots of different names people
21 have given to detection limits over time. Some of them
22 have different statistical bases and some don't.

23 So Lloyd Currie wrote the paper. He
24 developed the approach for LLDs, and in that paper he also
25 wrote about the limitations. His focus was LLDs, and he

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1 understood, I believe, reading his paper, that an LLD is
2 a decision on a data, on a data point, and he understood
3 that you can't take that same process to making decisions
4 on data, which is what we're dealing with.

5 Even if we're taking one sample a year from
6 a waste stream from a nuclear power plant, you have data
7 over many years from the same waste stream. We're
8 looking at data ultimately in most of what we do for PA,
9 and at that point, we should not be summing or averaging
10 LLDs, which is what the guidance would ask us to do.

11 MR. CAMERON: Okay. Thanks Paul, and Joe,
12 you talked about the flexibility in the guidance, and
13 listening to the conversation, Billy and Paul talking
14 about the problem with LLDs and how to address that,
15 what's your view on Don attacking the problem from that
16 particular perspective?

17 MR. WEISMAN: Well, I absolutely agree with
18 Paul, that summing LLDs is completely inappropriate.
19 But getting back to what Billy said earlier, this could
20 very well be, I don't know if "solved" is the right word,
21 but appropriately handled by better laboratory detection
22 limits.

23 If the generators ask their laboratories to
24 look better, look lower, generally the laboratories will
25 do whatever their customers want them to do, provided

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1 it's within their technical abilities. In what I've
2 seen on the environmental side of the business, it's not
3 as difficult to get down to lower detection limits if you
4 have patience and a lot of time to count.

5 I don't get the impression that the data
6 that's generated for Part 61 is something that's done
7 very -- you don't need the results the next day. You're
8 not looking to report on something, you send a sample
9 back.

10 So generally the laboratories do have time
11 to count these samples. If there's more information
12 provided from the power plants and from other generators
13 that it's their expectation that they want to see better
14 than ten percent of what's in the Class A limit, then I
15 think we might have a positive result in the industry from
16 that.

17 MR. CAMERON: Okay, Bill.

18 MR. DORNSIFE: Yeah. One approach,
19 obviously technetium and iodine are the real problematic
20 radionuclides we're talking about here, and they're both
21 fission products, and utilities keep very good track of
22 failed fuel.

23 So there should be some way to correlate,
24 you know, based on measured values, with the failed fuel
25 percentage, to come up with, you know, some better

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1 numbers. You know, we have data at this amount of failed
2 fuel. This is the amount you get in resins and, you know,
3 and then correlate it to different levels of failed fuel,
4 which the utilities do track.

5 MR. CAMERON: Okay, Billy.

6 MR. COX: I guess I wanted to -- hello?
7 Billy Cox. I wanted to add to what Paul was saying. But
8 first, I just want to make sure that I was clear relative
9 to something that Joe said, and that is that in some
10 cases, particularly radiochemistry analysis of
11 technetium-99 and iodine-129, it's not practical to
12 count to the real values, because the count times are very
13 long, and the laboratories have more than just one
14 licensee sample lined up in a row to count.

15 So there's a practical issue associated
16 with that, that you can't get the statistical number that
17 you want. You can with mass spectrometry. The
18 radiochemistry labs in general that do Part 61 analyses
19 don't have mass spectrometry capability to do this. So
20 that is a more costly analysis.

21 But to talk about data sets, which is
22 something that Paul brings up, and there is a lot of
23 documentation now that didn't exist in 1990, as far as
24 data sets go. The thing about waste stream sampling is
25 when we talk about utility waste, power plants have maybe

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1 three waste streams, maybe four waste streams.

2 A waste stream is dry active waste or trash,
3 filters that are used in liquid systems, resins that are
4 used in liquid systems. There may be other waste
5 streams, maybe waste streams for two different types of
6 resin or two different types of filters.

7 It depends on the variations in the actual
8 nuclides and the concentration mechanism in that
9 particular waste stream. But the thing about waste
10 sampling is in general, per the guidance and rightfully
11 so, there is only one sample. So the dry active waste
12 for DAW may be a composite of what we call smears or swipes
13 in the plant of contamination.

14 Filters could be a surrogate filter of the
15 reactor coolant, or it could be actual samples of the
16 filters that are sent out for analysis. Resins can be
17 direct samples of the resins, and some people replace the
18 data from year to year and some plants append the data,
19 if it doesn't change much.

20 But there's a lot of reasons why there's
21 only one sample. The guidance says that you'll sample
22 Class A waste every two years, and you'll sample B and
23 C waste once a year, annually. But there's, we're
24 talking about -- this is not a very, always a very easy
25 sample to get.

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1 In some instances, these samples are highly
2 radioactive. There's a small amount of resin that you
3 are able to sample, and there's an even smaller amount
4 of that that they're able to count. That is just the
5 reality of the radioactive waste.

6 But there's costs associated with the hard
7 to measure nuclide analyses too, things like that. So
8 it's appropriate. They don't change that much, and they
9 don't change.

10 The mix doesn't change much without changes
11 in chemistry, which is fairly constant, because
12 everybody, all the power reactors follow the guidelines,
13 primary chemistry guidelines, so without changes in
14 material.

15 So if you did a change in materials, for
16 example, you changed your steam generator tube material,
17 you would expect a change in your Part 61 data, or changes
18 in fuel integrity, as Bill mentioned. We don't see a lot
19 of fission products, I think in general in waste, as much
20 as we used to, because fuel integrity is much better.

21 So absent of changes in those things, Part
22 61 data from plant to plant remains pretty constant, and
23 everybody's, you know, burning uranium-235, and the
24 equilibrium core values of these nuclides, for example,
25 cesium-137 to technetium-99 or cesium-137 to iodine-129,

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1 those numbers are pretty constant.

2 So we know a lot about this scientifically.
3 We're just not applying what we know, and you know, back
4 20 years ago, there was a lot of uncertainty about using
5 scaling factors and there's actually an information
6 notice from 1992 on perhaps a plant using inappropriate
7 scaling factors.

8 But now that we've actually done a lot of
9 mass spectrometry work on iodine-129 and technetium-99,
10 we know what values to expect in relationship to other
11 nuclides that they can be scaled to, and the core
12 inventory origin runs tend to back that up.

13 MR. CAMERON: Okay. Thanks Billy, and
14 we're going to go to Don in one second. But I just wanted
15 to say that as I understand this last thread, so to
16 speak, that we've been talking about, we were talking
17 about, I think Joe said let's ask the generators to look
18 lower, okay, was the characterization of that.

19 I take it that some of the things that Billy
20 is saying is that well, there may be some practical
21 issues, cost, time, just feasibility, at least for some
22 radionuclides, for asking a generator to look lower. At
23 least that's what I'm picking up from what Billy said.

24 So let's keep on that thread. But Don and
25 Billy, I'll go back to you, because I mean --

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1 MR. DORNISIFE: Yeah, because I remembered
2 what I was going to say after Paul got done now.

3 MR. CAMERON: Okay. Well, let's see what
4 the NRC has to ask or say on discussions so far.

5 MR. LOWMAN: Just adding onto that,
6 probably where there was a NUREG study done back in 2000,
7 I think it's 6567, and they took -- it was on waste
8 characterization, and a sample demineralizer was put on
9 a reactor coolant line and run for an amount of time, and
10 they did use plant resins and the sample demineralizer,
11 and they used mass spectrometry to do the counting.

12 They were able to determine true iodine and
13 technetium numbers, and the statement in the NUREG is
14 that, you know, if the industry went to using mass
15 spectrometry that the values they found were of a
16 magnitude of four below like what the industry generic
17 scaling factors that were out at the time, and what people
18 were actually using. So I kind of wanted to make that
19 comment.

20 MR. COX: Right, and this is Billy Cox
21 again. And the reason for that is the original scaling
22 factors that were developed by EPRI and others, were
23 actually real, positive gamma emitters, cesium-137 for
24 example or cobalt-60 for another, compared to LLD values.

25 So that's why the number, the scaling

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1 factors were wrong, and I think Gene Vance and others
2 have, when you use the mass spectrometry, the numbers
3 make a lot more sense. They compare better to the core
4 inventory. As a matter of fact, I have that NUREG right
5 in front of me.

6 So there was an error in developing the
7 original scaling factors that people were using back in
8 that day, and it's just as erroneous as using the LLD
9 value, because the scaling factors were comparing real
10 numbers to LLD.

11 But in analyses where people have used mass
12 spectrometry and also based on core inventory analyses,
13 folks practiced at the DOE and the NRC back as far as 1989,
14 1990, and actually came to the conclusion that these
15 nuclides are being significantly over-reported.

16 Because you couldn't produce that much, as
17 Bill said, compared to the other ones. If you just look
18 at the site inventories for the different kinds of waste,
19 and you compare the numbers, you can't get there from
20 fissioning uranium.

21 MR. CAMERON: Okay, and that's -- I want to
22 see if Don has anything more to say and go to Bill, and
23 then ask Paul Black's opinion about this getting better
24 numbers.

25 But what Billy just said, is that I'd like

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1 to test this conclusion with all of you at some point,
2 that is it pretty clear that the numbers that the
3 generators are reporting on these are suspect and might
4 be leading, for whatever reason, and might be leading to
5 complications for the disposal site?

6 Is everybody -- I see everybody's shaking
7 their head "yes" on this. But at least that seems to be
8 one thing that all of you are agreeing, and I'm saying
9 this now, and if anybody wants to add caveats or whatever,
10 we can as we go along. But let's go to Bill and then we'll
11 go to Paul.

12 MR. DORNSIFE: The other part of this
13 issue, from a performance assessment standpoint, which
14 a lot of people don't recognize, is the fact that, you
15 know, these iodine and technetium have very different
16 Kds, depending upon their chemical form, and there's very
17 little information out there on what the chemical form
18 of these radionuclides are in resins, where they usually
19 occur, you know, from the standpoint of nuclear power
20 plant-based.

21 Now DOE raises a whole different other
22 problem, because you know, the tech is totally different
23 there. But you know, one would think if something is
24 captured in a filter or a resin, it's pretty insoluble.
25 It's not very soluble. So why can't you take advantage

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1 of that by using a much larger Kd, and it makes a world
2 of difference, folks.

3 We're talking for technetium, you know, a
4 Kd of zero versus 500, which you know, never gets released
5 if it's a Kd of 500. So you know, I think some work needs
6 to be done in terms of what is the chemical form, and you
7 know, that alone could solve a lot of the problems, from
8 a performance assessment standpoint.

9 MR. CAMERON: And when you said "Kd," and
10 then you reference what is the chemical form, I take it
11 that Kd is something that equates to --

12 MR. DORNSTIFE: It's basically the ability
13 of the matrix to retain that particular chemical, in
14 whatever, you know, isotopic form it's in. Oh, I'm
15 sorry. It's basically a measure of -- well, the ratio
16 of the stuff that's soluble to that which is insoluble
17 and being retained by the matrix.

18 MR. CAMERON: okay, and I'm not sure how the
19 thread about the better counting and the feasibility or
20 the issues with that tie into this. But I think that you
21 can all help me with that. Since I reflect that -- I'm
22 the ignoramus in the room.

23 MR. DORNSTIFE: It really does --

24 MR. CAMERON: So I'm just trying to
25 understand this.

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1 MR. DORNSIFE: This is more in real life,
2 if the issue becomes performance assessment, this is
3 probably a more effective way of dealing with it.

4 MR. CAMERON: When you say "this is a more
5 effective way of dealing with it," we're dealing with you
6 mean the Kds?

7 MR. DORNSIFE: What dose, what resultant
8 dose you get from a performance assessment standpoint.

9 MR. CAMERON: Okay, and I just want to
10 remind everybody, because people on the phones, we have
11 been cutting in and out, that if you just not only speak
12 into the microphone, but I think you're going to have to
13 raise your voice a little bit, okay.

14 And Paul, you've been following this
15 discussion and Bill just raised the issue of performance,
16 or he used the term "performance assessment," can you
17 give us your perspective on what you've been hearing?

18 MR. BLACK: I'll give you some perspective
19 on this. A performance assessment ultimately is what
20 drives our ability to dispose of waste. So it's the end
21 point that matters here, and the performance assessments
22 are being affected by us probably overstating inventory
23 for a couple of reasons, but LLDs is one of them and it's
24 an important one.

25 But one thing that in listening to the

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1 conversation and talking to Billy a lot over the last
2 several months about all of this, so that there are things
3 that we can do here, and as Billy said, there's not a whole
4 lot we can do with counting times. We take one sample
5 a year from a nuclear power plant, and yet we're all here
6 discussing this.

7 That sounds to me like it's an important
8 issue, and if it's an important issue, I wonder if we can
9 improve upon our processes for understanding this, and
10 really in a way this relates to the idea of something like
11 shouldn't we be using something like a DQO process, to
12 understand what sort of sampling regime we need, to
13 understand what's going on with these chemicals?

14 And from my perspective, DQO
15 philosophically is great, but I'd like to move in a
16 slightly different direction, and talk about it from a
17 decision context. But the issues ultimately are what's
18 the cost to us for having this poor information right now?
19 How can we improve it?

20 That's not just a sensitivity issue; it's
21 a cost issue. It's not just the cost of sampling an
22 analysis; it's the cost of the consequences of making
23 poor decisions in our PAs. That should all be rolled up
24 together to work out what should we actually -- what do
25 we actually need here for a sampling regime?

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1 We know what LLDs, but how do we want to
2 characterize this? So one of the big issues there is
3 data and data collection. But as Billy has also pointed
4 out to us, we have a lot of process knowledge here, and
5 the data that's being collected over years, as Billy
6 said, looks fairly constant over time. There's not a lot
7 of variation in it.

8 In which case, in this is where DQOs are
9 great, but we need a different statistical approach than
10 DQOs usually use. That statistical approach should be
11 taking advantage of that process knowledge, and then when
12 you go through a DQO process, you might find the sampling
13 regime is fine.

14 But a different statistical approach to
15 using the data, combined with process knowledge, would
16 get us to where we want to be, or where we should be.

17 MR. CAMERON: Okay. Just to try to reflect
18 back on what you just said, is that in terms of improving
19 the numbers, that we really need to understand what the
20 costs are and, perhaps qualitatively, what the costs are
21 in terms of the disposal sites and the inventory and the
22 larger societal costs, so to speak, okay.

23 But also what the, what's the cost of
24 getting, I'll just say getting "better numbers," and are
25 there other ways to -- are there more practical ways to

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1 deal with that particular issue?

2 MR. BLACK: Yes. So there are options to
3 take more samples than our present ones in some ways.
4 I'm not arguing that we need to. What I'm arguing is that
5 we need to understand what the costs are and what the
6 consequences are, and the consequences here are quite
7 large.

8 We are potentially having performance
9 assessment issues, right. So if we cannot dispose of
10 waste that we think we should be able to dispose of, and
11 ultimately, and I said this yesterday, this is not meant
12 to be advocacy. I'm trying to get to objectivism.

13 So the issue there is if right now we think
14 we're being too conservative with what we're putting in
15 as numbers to the PA, if that's the case then, we're
16 limiting our waste disposal options. That ultimately
17 comes back to the nuclear industry. That means they
18 don't have a waste disposal option.

19 Well, there are huge consequences here. So
20 I think that it's actually important to go out and get
21 this right, go through something like a DQO process to
22 understand, understand all of the issues, all of the
23 factors, and come up with a sampling campaign that
24 matches that. It might be what we have now. It might
25 be a bit different.

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1 MR. CAMERON: What was the term you used to
2 describe the process? DQ, what was that term you used?

3 MR. BLACK: DQOs?

4 MR. CAMERON: EQOs, yes.

5 MR. BLACK: DQOs, the Data Quality
6 Objectives.

7 MR. CAMERON: DQOs, okay. Data Quality
8 Objectives. So okay. Let me ask Joe a question at this
9 point. We're sort of going full circle here, but you
10 know Joe, you talked about the generator getting better
11 numbers, and you've heard this discussion.

12 I wanted to go back to what you said
13 originally about the NUREG giving generators more
14 flexibility. How does that idea of the generators
15 having more flexibility tie in with some of the
16 discussion that you've heard Billy and Paul and Bill talk
17 about, in terms of how you get better numbers and the
18 cost? I mean how does that tie in in your mind?

19 MR. WEISMAN: Well, if the generator only
20 has one option for recording data, then that kind of makes
21 the information that we receive, like de facto, what they
22 report. So and Bill brings up a good point here too. I
23 only mentioned the problem on the front end of the issue,
24 at the generator side.

25 There are things that we can do on the

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1 disposal side, to make life easier on ourselves. Our
2 site already has an EIS published, and within it, we have
3 assumptions for the solubility of all of these key
4 nuclides. And in terms of how our license functions,
5 those assumptions are raw for us.

6 Unless we can get the state of Washington
7 to reevaluate, based on new chemistry, new science, the
8 chemical form of what's being brought in is of the utmost
9 importance. But we might be making very, very bad
10 assumptions and very bad applications of what's in our
11 EIS, compared to what the waste is coming through the
12 door.

13 Now that onus is on us, I think, to address
14 it internally, and it might not be as much of an issue
15 once we understand that better, and if we can apply more
16 accurate fate and transport information to these
17 inventories that are coming in, the LLD values might not
18 be as important in the future as we think they are now.

19 So that's one way that I think on the
20 disposal side we can address this ourselves a little bit,
21 if there's an opportunity and an onus to do that.

22 MR. CAMERON: So that's interesting. I
23 see Bill shaking his, nodding affirmatively on that, that
24 there are some things that the disposal site might do,
25 in looking at their performance assessment. I think

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1 what you -- the last thing you said was pretty powerful,
2 saying in terms of what we've been talking about, is that
3 maybe the LLDs, maybe that's not important anymore. Is
4 that --

5 MR. WEISMAN: It could very well be that the
6 LLDs aren't as much of an issue as we'd like them to be.
7 Right now, since --

8 MR. DORNIFE: Well Chip, just to give you
9 an example, for technetium, if you assume the stuff is
10 tech-VII, which is the soluble form, and then you change
11 it to tech-IV, which is the insoluble form, the doses go
12 down by four or five orders of magnitude.

13 MR. CAMERON: Okay. Good example, and
14 before I go -- go ahead, Joe.

15 MR. WEISMAN: Just one more point. I know
16 that in a very simplistic way of looking at it, like the
17 RESRAD screening model, for example, they always default
18 to the most conservative Kd values, unless you have a
19 site-specific number that you can plug in.

20 It's easier for us to make a regulatory or
21 a compliance decision, I should say, based on a more
22 conservative Kd value or a more conservative fate and
23 transport number, because frankly those numbers are
24 easier to defend.

25 You don't have to go out on a limb and try

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1 to prove the negative for a non-soluble form of the
2 chemical versus a soluble form of the chemical. So we
3 as an industry always tend to fall on the more
4 conservative side, because it's easier to show
5 compliance.

6 So maybe we need to re-look at that, and
7 spend a little more time developing a real number. I
8 know Paul, this is what he advocates a lot. Advocate a
9 real number instead of just a conservative number.

10 MR. CAMERON: Okay. Real number versus
11 conservative number, and Joe put the term "compliance"
12 in there, and I think when we go to our first discussion,
13 maybe the states that are here or on the phone can give
14 us some perspective from that compliance point of view.

15 And I wanted to go to Billy and then hear
16 from Don, but also want to check in with Sean about some
17 of the things that have been said, particularly this last
18 point about what the sites can do, in terms of looking
19 at their performance assessment.

20 But let's see what Billy has to say, and then
21 we'll go to Don, talk to Sean, and go back to Paul and
22 I think we may be ready to go to the audience and the
23 phones then. Billy?

24 MR. COX: Well, just to follow up on what
25 Joe said and what Bill's talking about as well. You

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1 know, there is definitely a benefit in performance
2 assessment case for looking at the chemical form and, you
3 know, using different Kd values.

4 The fact of the matter is that from just from
5 an activities standpoint of what we're manifesting, you
6 know, we could be a 100 to 1,000 times greater than what's
7 actually present.

8 That's our research and other people's
9 research indicates that that is an easy number to fix,
10 and you can do that without doing a bunch of studies for
11 chemical characterization. We need to get an accurate
12 activity value on the manifest. I think that's
13 important.

14 It's important, so that we're not biasing
15 the disposal site inventory adversely or positively, but
16 it's also important from a performance assessment that
17 we're getting what we believe is an accurate number for
18 the inventory in there.

19 What you use for a chemical form to that,
20 you know, that's your license and your site-specific
21 characteristics that may drive that, you know, or not.
22 It may not be that important. It may be easy to use a
23 conservative number then. But right now, we're
24 manifesting them extremely high.

25 I wanted to follow up on something that Paul

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1 said earlier, when I started talking about, you know, low
2 level waste and there just being, you know, like one
3 sample per waste stream per year or a few samples per
4 waste stream per year.

5 It does collectively add up. The
6 difference in this, because of this, there's not a lot
7 of data set, and for these particular nuclides, if you
8 look at data sets, if you tried to look at data sets and
9 you looked at manifest numbers, you'd be looking at LLD
10 numbers, which mean nothing. Those numbers mean
11 nothing.

12 So that data set really doesn't exist for
13 what you need for data. What we've done is we've
14 actually gone into -- we've started going into the actual
15 Part 61 labs, and we've been getting a data set of count
16 data from them, for ten years' worth of counts, net count
17 rates for carbon-14 and tech-99, or looking at
18 iodine-129. We've just started to analyze that data.

19 But this was recognized in -- this issue
20 with data sets, in environmental monitoring, data sets
21 exist. Data sets develop more quicker, because you may
22 have one sample a week or one sample a month kind of thing.
23 So you end up with a data set, and you report the activity,
24 the licensee would report the activity and effluents that
25 they discharge, and the Revision 1 of Rev Guide 1.21 used

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1 to have licensees put a less than value in there, and the
2 nuclide that was their LLD value.

3 Now what happened was people were dropping
4 the less than, and those activity values in effluents
5 were being propagated as real, when they weren't. In
6 Revision 2 of Rev Guide 1.21, people are encouraged, if
7 they get an LLD value for something that they look for,
8 to leave that blank, so they're not propagating that
9 error.

10 This is the same issue. It's just that we
11 don't have as big a data set. But in the actual,
12 determining the activity, radioactivity in data sets,
13 negative values are as statistically valid as positive
14 values. That's the way we need to look at this. We need
15 to look at this as a data set.

16 Like Paul was saying, you know, what's our
17 data quality objectives? My feeling is that with all the
18 research that's already out there, and the physical
19 characteristics of what our reactor fleets are --

20 I'm just talking about utility waste, power
21 reactor waste, but the physical attributes and chemical
22 attributes probably at work, I think what we'll find is
23 what we're doing is probably fine for a sampling regime.

24 I think, I really believe that we'll -- that
25 there's a lot of data that confirms that. The big issue

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1 in my mind remains that we're not putting an accurate
2 number for these nuclides on there, and we should be.

3 MR. CAMERON: Okay. Let me just check in
4 with you on one clarification, is that the first part of
5 what you said, before you went to the data quality
6 objectives talk that you just did.

7 Was that sort of a caveat on what Joe was
8 suggesting, about how much could be done by the disposal
9 site, in terms of their performance assessment? In
10 other words, your view is that we're not going to -- we
11 still need better numbers from the generator.

12 We're not going to solve that, and let me
13 go to -- let me ask Joe about that. Go ahead, Joe.

14 MR. WEISMAN: Just Billy's right. I think
15 when you look at, and to draw a comparison to like the
16 EPA side of the house. They said, you know, instead of
17 installing engineering controls when you know you have
18 a pollutant, number one should be reduce the pollution.
19 Reduce the source of where you start.

20 That's what Billy's saying. Instead of,
21 yeah, there are opportunities for us to fix the problem
22 on the back end with performance assessment, or maybe
23 just correct some of this to make sure the data, the fate
24 and transport's being done properly? But number one
25 should be make the data accurate; reduce the numbers if

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1 they need to be reduced.

2 MR. CAMERON: Okay, great. I just wanted
3 to --

4 MR. DORNSIFE: And I agree with that.

5 MR. CAMERON: Great, thank you. That's
6 Bill Dornsife in agreement there.

7 MR. DORNSIFE: The chemical form is more
8 making the performance assessment more realistic. But
9 I think the numbers need to be addressed first.

10 MR. CAMERON: Okay, good, good, that's
11 important. Let me just check with NRC, and then let's
12 hear from Sean on some of these issues, and then we'll
13 close with Paul this session, and we'll go to the
14 audience. Sean.

15 MR. LOWMAN: Okay. Going to the theme of
16 flexibility, you know, there's 30, 40 years of data out
17 there, sampling data. There's been studies of doing
18 generic scaling factors, there's software modeling
19 programs. Are we in any way prohibiting you guys from
20 using any of that stuff?

21 MR. COX: No, and to answer that, to answer,
22 it really is a clarification on what Joe said. You know,
23 having been a shipper, shipping is not a science project.
24 Shipping is an activity that someone does. They take
25 data and they process it and they fill out the

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1 documentation and they ship it. A shipper is not
2 necessarily always a scientist.

3 So they use process that in some instances
4 is easier, and some plants use -- the guidance lets you
5 use other ways of determining things. But the path of
6 least resistance and the easiest way to do it tends to
7 be from a human nature standpoint what we end up with,
8 which is why a lot of people just manifest the LLD values.

9 There are plants that use constant scaling
10 factors that they develop for their plants, or other
11 bases for reporting the nuclides, these particular
12 nuclides.

13 But there's, I think, for the most part,
14 based on the data that we see in the inventories, people
15 are just using the LLD value, because that's what the
16 manifest and guidance lets them do.

17 MR. CAMERON: Okay, all right.

18 MR. COX: You can use other numbers. You
19 just, you need to develop a basis for it. I think that
20 with what we have in front of us now for research, by more
21 than just EPRI, I believe that we have enough information
22 now, you know, 20 years later, to come out and say it's
23 probably okay, in the absence of a positive value, to use
24 a constant scaling factor. Sweden does this,
25 Germany does this, Spain does this, France does this.

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1 All the regulators in those states and Korea too. All
2 the regulators in those states actually provide the
3 generators with constant scaling factors to use for how
4 they're measuring effluents.

5 They're actually scaling carbon-14 in
6 instances when they can be measured in waste. We
7 probably need to look a little harder for carbon-14 than
8 we are, because the data kind of jumps around a little
9 bit, and carbon-14 doesn't really scale well, because
10 it's cooling implied, cooling activation implied, not
11 really a fission product or a corrosion product.

12 MR. CAMERON: Okay.

13 MR. COX: There's a lot of basis for this,
14 and the numbers aren't that much different when you start
15 looking at scaling factors on a larger scale.

16 MR. CAMERON: Okay, thank you. Thank you
17 Billy, and let's -- this last thing you said about develop
18 a basis for the numbers, and I think that ties in with
19 this data quality objective perhaps. But let's save
20 that discussion, because the big question for me when I
21 hear that is who's responsibility is it to do that?

22 But I want to hear from Sean, whatever he
23 has to share on these issues, and then we'll go to Paul.
24 Sean. Sean McCandless.

25 MR. McCANDLESS: Sure. Sean McCandless

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1 with Energy Solutions. We started the conversation with
2 the question of what the disposal sites do, and since my
3 regulator is sitting here, I'd like to point out that we
4 heard both one disposal site treats them as zero and one
5 treats them as real numbers. So for purposes of
6 inventory, it would appear that maybe I can do either.

7 But what Clive does is we treat them as zero
8 when they're entered as an LLD value. I'd like to
9 actually seize on something that Bill mentioned in
10 passing, and amplify it. Don, this may be something that
11 you want to encourage or seek input in follow-on sessions
12 on this, and that is the processors.

13 I would say that a majority of the activity
14 we receive at Clive has been through a processor process,
15 and if, as in Bill's example, if we have processors that
16 are effectively compounding LLD values, and then
17 reporting out on a disposal manifest the value that is
18 not bracketed and therefore treated as real. We think
19 we have some low-hanging fruit for really turning back
20 the amount of over-estimation that shows up in disposal
21 site inventories.

22 The last point I'd like to make at this time
23 is to seize on something that Billy was just saying. You
24 know, if as we said, the shipper is not a scientist, and
25 it's a person seeking a path of least resistance to do

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1 a task, really. Get the manifest filled out and get the
2 package off site.

3 One of the strongest motivating factors
4 that that individual has, I think, is the avoidance of
5 compliance problems. So the conservative path, the path
6 of least resistance is well, if it fits within Class A,
7 then there's no cost to me to put the high value versus
8 the real value.

9 Therefore, I'm going to put the high value
10 and protect myself better against potential for any kind
11 of regulatory citation.

12 MR. CAMERON: And it's not -- so it's not
13 just the -- it's not just the generator. I mean this is
14 a thread that says "let's be conservative." Whether
15 we're talking about generator or shipper, let's be
16 conservative, because we're worried about compliance
17 issues, and then that cascades down the line, and the
18 disposal site is sort of stuck with the problem.

19 So let's put that in the parking lot, in
20 terms of what can we do about this fear of -- the
21 compliance fear, I'll call it. Is there anything -- what
22 can we do about that specifically?

23 But I really do want to get to the audience
24 and the phones. So let's hear from Paul, and there's
25 plenty of time. We're going to come back to the panel.

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1 But let's hear from panel and then we'll go to the
2 audience.

3 MR. BLACK: Well, I'll probably reiterate
4 some of what was said. But you know, aiming for
5 compliance is not the only end point we need aim for
6 ultimately. We have few waste disposal facilities. We
7 should be optimizing the use of them, and compliance
8 alone does not do that.

9 We must comply, but then we should be
10 optimizing. We need the right data to help us do that
11 and not conservative data. Billy mentioned that the
12 radionuclide data includes negative values, and we
13 should be using all of that. Absolutely we should, and
14 going back to Lloyd Currie's paper, on which all of this
15 is based, he said the same thing.

16 So it was all in there back then. I'm sure
17 essentially what got put into 0204 is what NRC needed at
18 the time, and it was just taking the end point of Lloyd
19 Currie's mandate, was to write something up on LLDs. He
20 put a lot of other caveats in there, but it's the use of
21 the LLDs that got put into 0204.

22 So there's definitely room to do that, and
23 we've seen cases over the years where whether it's LLDs
24 or MDAs, some very poor decisions have been made that have
25 caused a lot of trouble, and we go back unfortunately

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1 after the fact and said "you know that wasn't there, don't
2 you?" They give us this quizzical look and say "But we
3 found the MDAs. We have some results above the MDA." We
4 said yeah, but it isn't there.

5 You need to know how to interpret
6 radionuclide data, including the negative values,
7 including ambient background, including all of the other
8 factors that go into the equations that are in Currie's
9 paper that everybody's using, and then do the statistical
10 analysis properly.

11 Since you have data over years now from the
12 same process, you could trend it just to make sure that
13 it's okay and random enough that you can use
14 statistically without adjusting for a trend. But if you
15 can, now you have a distribution of positive and negative
16 values.

17 If that distribution is symmetric and
18 centered on zero, it isn't there. If it's centered
19 somewhere else, it probably is there. But now you get
20 an idea of what it is. That's the information we should
21 be using, not LLDs. So there are ways of doing this.

22 One other thought before we go, I suppose,
23 and that's there's issues here of manifesting and what
24 we put in a PA. I suppose in an ideal world, they would
25 be one in the same. But I also wonder if they have to

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1 be. I think it would be great if they can be, but we're
2 potentially burdening generators when we do that, and
3 generators would like things to be as simple as possible.

4 So at Clive, and this is a different
5 context, but we did a PA at Clive for the DU, and there's
6 manifested values for that DU, and in a way we used those
7 manifested values. But the manifested values were
8 averages from chemical analysis done at Savannah River
9 back around 2000, and that's all that was on the manifest.

10 We went back and got the Savannah River data
11 and did a proper analysis of it. Once we were done with
12 that proper analysis, we now have not only a central
13 value, but the uncertainty around it. Now that's what
14 we've pushed through the PA.

15 So this is not just a matter of getting the
16 values right; it's a matter of understanding what the
17 uncertainty is, because ultimately the uncertainty
18 drives where you should be putting your resources to
19 reduce uncertainty in your PA results.

20 So now we understand what that is. But my
21 point here is that what was on the manifest was a number.
22 But we still went back and found the actual data and used
23 the data in the PA. So there was, it was not fully
24 connected between manifest and PA. Maybe it doesn't
25 have to be. I don't know.

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1 MR. CAMERON: Thank you for that, Paul.
2 Let's go to the audience, that being here in the room and
3 on the phones, and anybody on the website. We're going
4 to start with here in the room, and I think we're going
5 to go to Lisa Edwards first, and either way. Whatever's
6 the most comfortable for you is --

7 MS. EDWARDS: Lisa Edwards with the
8 Electric Power Research Institute. I guess I want to
9 start off by thanking the panel and the NRC. I found your
10 discussion to be very informative and quite a sound
11 technical basis behind your remarks. So that was, I
12 think, rewarding to listen to.

13 At the Electric Power Research Institute,
14 we do research into a number of areas, and I just want
15 to summarize a few things I've heard today, and couch some
16 of the things that Billy will be bringing forward during
17 the course of the discussion today. In multiple areas,
18 we are addressing compliance versus accuracy.

19 We have a long legacy in the industry of
20 compliance-related issues, and it doesn't matter if
21 we're talking about waste or dose assessment. Multiple
22 places it comes up. When you're doing reporting for
23 compliance purposes, accuracy is not the important part.
24 Compliance is the important part.

25 But adopting that attitude, the industry is

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1 now starting to have a cost that was unanticipated, okay.
2 When the NIS does a cancer study around a nuclear power
3 plant and they use compliance data associated with the
4 reported dose.

5 That wasn't real dose. That was dose
6 calculated for a fictitious individual who was sitting
7 on a fence post at the edge of the property 24-7, 365,
8 eating all of his vegetables off the land, drinking the
9 milk from his cows, yada-yada. It wasn't a real dose.

10 But that's what's on the public record now.
11 It worked because it was compliant. But now that it's
12 being used in an application to do a comparison of what
13 kind of cause results that dose had on someone, it's
14 problematic.

15 The same goes here, and where I would sum
16 this up is it's a discussion of compliance versus
17 accuracy, and in EPRI research, Billy and others in our
18 group are pushing accuracy. In some places, the use of
19 accuracy over compliance gives you a lower number, a more
20 favorable number from the industry perspective.

21 In other places using accurate numbers, say
22 using a scaling factor that might be more accurate than
23 zeroing a number, is going to give you less. It's going
24 to be something greater than zero. EPRI Research is
25 going to push using accurate numbers, because we've seen,

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1 over time, the implications of using compliant numbers.

2 So once you get to that compliance and
3 accuracy argument, I think two things come out. You've
4 got two options as industry. If you say that less than
5 one percent of the Class A limit is below concern from
6 a reporting purpose, from a regulatory standpoint the
7 regulator could come out in a NUREG and say if you're less
8 than one percent of the Class A limit or some other limit
9 that you come up with, that below that number it's not
10 worth chasing.

11 It's not worth monetary cost, dose cost,
12 etcetera, to chase that number any lower than less than
13 one percent. I think Billy and Paul have both introduced
14 information that suggests, for at least some of the
15 radionuclides on the Phantom 4 list, I don't know about
16 chlorine-36, we can get to one percent of the Class A
17 limit on our LLD, okay.

18 So that's a choice, I think, that goes into
19 regulatory space. We're going to do research at EPRI
20 that goes after the second option, which is more of the
21 accuracy. If you hit an LLD value at one percent of the
22 Class A limit, we're going to produce a technical basis
23 that suggests you should use generic scaling factors in
24 the industry, like multiple countries in the world do,
25 to put an actual accurate number instead of zeroing.

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1 I'm sorry this is taking a minute, but I only
2 have a couple more points. So we'll go through that
3 basis, and I understand that there have been some
4 pushback in the 90's related to generic scaling factors.
5 But I believe we have better data available to us now that
6 addresses the concerns that were previously raised
7 related to the generic scaling factors.

8 The last point that I would make is that we
9 started down this path many years ago, actually I think
10 before the ICRP-103 was issued, all right, and we were
11 on this path of going after accuracy rather than
12 compliance. I would suggest that the importance of this
13 discussion is going to increase when we go through
14 ICRP-103 and we update the dose conversion factors.

15 I believe what we're going to find is that
16 the dose conversion factors related to these
17 radionuclides, at least in some cases, increase. So the
18 over-reporting that we're experiencing now is going to
19 affect the downstream performance assessment.

20 The impact of that or the cost of that is actually
21 going to increase, because the dose conversion factors
22 in some cases are going to be higher. So it's important
23 to get this right.

24 MR. CAMERON: Thank you Lisa, and I'll be
25 back to Clint and others. I want to go to -- first of

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1 all, I want to go to our token state regulator, Rusty.
2 But please introduce yourself.

3 MR. LUNDBERG: Thank you. My name is Rusty
4 Lundberg. I'm with the state of Utah, the Department of
5 Environmental Quality. One of the points I want to
6 factor into this is that we fully realize as a regulator
7 the value and the foundational benefit that we derive
8 from accurate information science.

9 Science melds with what you build in terms
10 of the regulations. We certainly understand that, but
11 one of the other factors that we have to bring into this
12 is that we also represent the public, who are less knowing
13 or knowledgeable about some of the science of this
14 information.

15 So when you go to compare accuracy versus
16 compliance and setting compliance points through
17 regulations, you tend to build in these additional levels
18 of safety, to build confidence and trust.

19 And as you look at the role that we have
20 then, to balance representing the public's view of this
21 and our role as the regulatory or regulating agency, we
22 do have to factor in the fact that in addition to the
23 accuracy and the science that's in here, what's the
24 comfort and what's the public trust that we also want to
25 gain, because we can assure public health and safety is

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1 protected at this level as well.

2 So I understand fully that although we get
3 to more accurate information, as Lisa has indicated
4 through additional research, you also will still come out
5 at the end okay, there's the boundary for the technical
6 information. But what additional, what additional
7 assurance or protection do you want to build into that,
8 that establishes the comfort of compliance?

9 I understand that that may be more
10 difficult. All I'm saying is that that's the standpoint
11 that we also have to factor into this too, is that it's
12 not always just purely the science, and that information.
13 It's in addition to that, and confidence, and the idea
14 of protection of public health and safety.

15 MR. CAMERON: Thank you. Thank you very
16 much Rusty, and we're coming back. We have some
17 comments, questions on the web, and I want to go to the
18 phones too. So let's get a couple of people more here,
19 and then we'll go to the phones. John?

20 MR. TAUXE: John Tauxe with Neptune and
21 Company. I just have one quick comment and one question.
22 One comment as I heard solubilities being brought up,
23 especially in the repository environment, and to me,
24 that's sort of irrelevant to this question, because if
25 something's very soluble it runs off and may hit one

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1 receptor.

2 If it's not soluble, it remains behind and
3 hits another receptor like an intruder. So there's no
4 -- there shouldn't be any bias in the consideration of
5 whether things are soluble or insoluble.

6 Another question I have is all the
7 discussion has been focused, it seems almost entirely --
8 well, entirely on nuclear power plants. But doesn't
9 this NUREG brochure and the manifesting and all that
10 apply to other generators as well? It doesn't, it's not
11 -- I would like to make sure that the discussion is
12 inclusive of other generators, and there may be other
13 issues that they have that nuclear power plants don't
14 have.

15 I don't know, if anybody has any other
16 perspectives from other than the NPP perspective, I'd
17 like to hear it.

18 MR. CAMERON: Okay. Thanks, John.
19 Before we go to break, I'll just check in with Don and
20 others about the other generators issue. But I think,
21 I don't know if Perry, do you have something?

22 MR. WILLIAMS: Yeah, I do.

23 MR. CAMERON: Okay. Please introduce
24 yourself, and then we'll go to the panel.

25 MR. WILLIAMS: Okay. My name is Perry

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1 Williams. I'm representing Studsvik. We're a
2 processor, so I want to bring up an issue that's actually
3 over there in the parking lot, and Sean, you touched on
4 it a little bit.

5 So the issue that we see is that we have LLDs
6 that are generated to us. And then the case that we
7 process waste, I'll give you an extreme case where we say
8 we received 10,000 pounds, and then if we conditionally
9 release 9,999 of those pounds, the activity that was
10 manifested to us stays for that one pound that goes for
11 disposal.

12 So in that case, you're actually increasing
13 the concentration of an LLD, because the Table 1 value
14 and the Branch Technical Position is a concentration.
15 So you can actually end up with more than one percent of
16 the Table 1 value, and therefore increase the definition
17 of what an LLD is.

18 And so we take the conservative route and
19 if that case happens, we then manifest that number as a
20 true value. But then that produces a problem for the
21 disposal sites, because we now have increased the
22 activity that was manifested to us by taking the
23 conservative route.

24 So I'd like to see the NRC address it from
25 a processor standpoint, and give guidance on what to do

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1 in those situations where waste is manifested to you, but
2 some is conditionally released or free-released.

3 MR. CAMERON: So then it would be helpful
4 for the -- if there were some guidance for the processors
5 on that respect. And Billy, we'll go back. I want to
6 get to the audience and the phones, and Clint? Please
7 introduce yourself.

8 MR. MILLER: Clint Miller, Pacific Gas and
9 Electric Company. So as an individual who has to, you
10 know, implement and comply with this regulation on
11 manifesting, we're going to come back to the key word here
12 of "must." In an LLD in our PAs, if we see a "must"
13 instead of a "may," we probably wouldn't be here.

14 Because it says "must," if my peers get an
15 LLD on their reports, they would manifest it as that.
16 Long ago, almost 20 years ago, EPRI saw that this was an
17 issue, especially for tech and iodine, if they weren't
18 there.

19 We're not going to sample our way out of this
20 with the commercial labs, you know. They will give you
21 LLDs, either a minus 4 for tech or a minus 5 for iodine,
22 and they're not there.

23 EPRI has gone out. Back in the 90's, we
24 took samples of resins and some filters at some plants
25 that had some defects, some that didn't, and the numbers

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1 came back at like even a minus 8, even minus 9 and lower.
2 We knew how much tech was there and how much cobalt was
3 there on those samples. We knew how much cesium was in
4 the sample and how much iodine was in the sample of 129.

5 So those industry generic scaling factors
6 were developed. As I understand it, they were proposed
7 to the NRC and the NRC said "Very good. This all good
8 science, but the plant can't use a generic scaling
9 factor," even though France uses ours. If we derive
10 scaling factors, France uses them.

11 Our plant participated in that study and
12 research. I believe it was a year or two later. We
13 actually had a fuel defect, our first defect ever in Unit
14 2. We've only three defects in the life of our plant.

15 I want to go back to the EPRI generic scaling
16 factors. We're also benched with the theoretical
17 calculation of what the core could produce, and they
18 aligned very well. So I would say our sampling and our
19 benchmarking is done. It's done.

20 Now to that point, we could not use these
21 generic scaling factors. They were not allowed by the
22 regulator, but we had a defect. We went out to go to
23 Pacific Northwest Lab, which was the only entity at the
24 time that could do this mass spectrometry. It took, we
25 sent out several samples from both units, one with the

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1 defect, one without, filters and the rest.

2 It took months to get those results. It
3 took even longer to get the bill, which may be why we're
4 going to have the sequestration tonight, because I had
5 to write the bill for Pacific Northwest to have to give
6 to me to pay them before the end of the year.

7 It took months to get that data. But we
8 have been living at Diablo Canyon on our site-specific
9 scaling factors off of MD, mass spectrometry analysis,
10 and we have not had a bigger fuel defect yet.

11 So we say we're not conservative, and not
12 reporting LLDs, but real values with a scaling factor.
13 So I believe it's coming back to what can the plants do
14 here.

15 In addition to EPRI having the scaling
16 factors, a calculation method code was developed, and
17 I believe a NUREG and a topical report was even put out,
18 where industry could and can still do a calculational
19 method off of RCS chemistry, and calculate these values
20 of tech and iodine. That option is available to us.

21 But as Billy said, things being what they
22 are, the path of least resistance, I get a lab sample.
23 It has an LLD on tech. It says "must." I write that in
24 there as a practitioner. But if we change that around
25 and say let's go for accuracy, I believe we should have

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1 the option to put in site-specific scaling factors if you
2 derive them.

3 If you get an LLD result from our lab, use
4 an industry scaling, industry scaling factor for these
5 two nuclides, or you can do a calculational method, which
6 is out there and already approved by the NRC. Any of
7 those three will be good.

8 If a certain burial site has an agreement
9 with their regulator to use zero, then maybe there should
10 be an option here for site-specific, to put in to be
11 determined, zero with your regulator and an asterisk.

12 MR. CAMERON: Okay. Thank you very much,
13 Clint. That's very helpful, and I'll try to
14 characterize that for when we come back and have the next
15 panel discussion, because it's useful to hear from a
16 generator on this. Now do you have a quick thing, Lisa,
17 before -- I want to get to the phones.

18 MS. EDWARDS: Rusty, I was very interested
19 in your comments, and I would just say that I think what
20 I'm proposing for accuracy, or what the group is
21 proposing for accuracy it relates to reporting by the
22 generator.

23 But the limits that you set as a regulator
24 ensure compliance, which when you pick a number for
25 compliance, it should include those safety margin

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1 aspects for the public confidence.

2 And doing that should be found in the
3 regulatory basis for the compliant number. That doesn't
4 change the need to report accurately what's actually
5 being shipped.

6 MR. CAMERON: Okay. Thanks, Lisa. I
7 think I need to give Larry Camper of the NRC an
8 opportunity to address Clint's "must" versus "may."
9 Larry.

10 MR. CAMPER: No, thank you Chip. Thank
11 you, Clint. You've bought that up before, and I was
12 looking back at my slide that you initially reacted to,
13 and the bullets that "DTM activities may be
14 over-estimated," I think you would say they will be
15 over-estimated, I suspect, as LLD values on manifests
16 required, which is the "must" part of it, if DTM isotopes
17 detected below LLD.

18 Now and so there's no question that the
19 guidance document says "must," and that's always
20 troubling, if nothing else but philosophically when a
21 guidance document says that, because it's supposed to be
22 a way of doing something.

23 But in listening to all of the discussion,
24 I think Paul's done an excellent job of describing
25 Currie's paper and the background related to this, and

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1 the fact that although he says "summed" in the guidance,
2 that wasn't Currie's intent. He acknowledged that,
3 you're right, and I think there's been a lot of good
4 dialogue about the different ways to tackle this problem.

5 So I guess what I would like for the group
6 to do, if you reach the conclusion that the way to solve
7 this problem is to revise the guidance, then tell us
8 precisely what the guidance should say. The "must"
9 component, that is something we're simply going to fix,
10 because it shouldn't say that.

11 But what should it say? What is the
12 alternative to address the problem?

13 MR. CAMERON: Okay, and I would note it was
14 interesting that when Clint talked about changing "must"
15 to "may," he gave some examples of some choices that they
16 might have. So it's probably not as simple as just
17 changing "must" to "may," but the NRC providing some
18 additional guidance about these are some options you can
19 consider to going forward with.

20 Tracy -- I don't know why I'm yelling.
21 Tracy?

22 OPERATOR: Yes.

23 MR. CAMERON: Do we have some people on the
24 phone who have a question or comment?

25 OPERATOR: If you'd like to ask a question,

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1 please press *1 and record your name at the prompt.

2 (No response.)

3 OPERATOR: There are no questions or
4 comments at this time.

5 MR. CAMERON: Okay. Thanks, Tracy. We
6 also have people on the web, and we have some fairly
7 lengthy statements that are being made, and I just want
8 to apologize to the people who are on the web, that we're
9 not going to be able to take everything that you have
10 written there.

11 But we do want to recognize you, and so we're
12 going to be sort of arbitrary about what we read into the
13 record here. But the full content of your remarks will
14 not be lost.

15 So we're going to go to Michael, is it
16 Plemmons? How about the South Carolina, the one
17 statement from the South Carolina person, and then we'll
18 go to the first Michael for the two statements? Hopper,
19 okay, and then we're going to go to Loren, okay. So here
20 we go.

21 MS. PINKSTON: Okay. The first question
22 is for Paul, and it's "With regard to the SRS data, what
23 was the difference between manifested versus actual
24 results when the PAs were calculated?"

25 MR. BLACK: In regard to what?

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1 MS. PINKSTON: SRS data.

2 (Off record comment.)

3 MR. CAMERON: We need to get you on the mic,
4 just answering this question.

5 MR. BLACK: The difference really with what
6 we did there was we just did the statistical analysis of
7 the SRS data. The difference between the mean of that
8 and what was on the manifest was negligible. I mean they
9 were essentially the same. What we used the data for was
10 to understand the uncertainty.

11 MR. CAMERON: Okay, and this is from
12 Matthew Hooper, and do you want to read those last two
13 for us?

14 MS. PINKSTON: Okay. The first question
15 is "Can the panel discuss LLD analysis when sample
16 results are reported in terms of microcuries per sample
17 or per smear, versus microcuries per gram?" Shall I read
18 the second one?

19 MR. CAMERON: Yes, please.

20 MS. PINKSTON: Okay. The second one is are
21 there any real instances of conservative LLD values
22 impacting the amount of waste a disposal facility can
23 receive?"

24 MR. CAMERON: Okay, thank you. That's
25 from Matthew Hooper, and Billy, can you begin to take both

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1 of them?

2 MR. COX: I could take the first one, and
3 I'm kind of speaking for the lab, but I've had this
4 discussion with at least one lab before, and it is -- it
5 is a complicated issue, to demonstrate that you've met
6 the LLD, recorded LLD value for when you don't have a
7 quantity.

8 So you send something for example, smears.
9 There's no mass associated with the activity on a smear.
10 You're just looking for the fractions of the nuclide so
11 you can do a dose rate per curie.

12 The way that it's been explained to me is
13 the labs based their compliance with the LLD values on
14 the size of the aliquots. So the aliquots that they
15 analyze from that sample is how they determine whether
16 they're meeting the LLD value or not.

17 MR. CAMERON: Okay, thanks Billy.

18 MR. COX: I missed the second part of the
19 question.

20 MR. CAMERON: I think let's let Bill answer
21 the second part.

22 MR. DORNIFE: I'll address the second
23 part.

24 MR. CAMERON: Good, Bill.

25 MR. DORNIFE: In fact, we have currently

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1 very conservative inventory limits in our license, both
2 for the compact facility and the federal facility. Now
3 they were established based on using RESRAD, and
4 obviously with using a more sophisticated code, we're
5 able to start addressing changing those limits.

6 But we were severely limited in terms of
7 particularly the carbon-14 limit that we had for the
8 compact facility, and the technetium limit that we had
9 for the federal facility. Yeah, it was a very severe
10 possible impact, in terms of what we could receive.

11 MR. CAMERON: Okay, thank you, and thank
12 you Matthew, for those questions and comments, and also
13 thank Michael from South Carolina for the Savannah River.

14 We have several comments and questions from
15 Loren, the state of Utah. We're going to address two of
16 them, and we have a record, okay, of everything that is
17 being offered here. So it won't be lost. But we're only
18 going to go online for two of them, and Karen, can you
19 do those for us please?

20 MS. PINKSTON: Okay. The first question
21 is "Clearly, the needs and interests of waste generators
22 and disposal sites are different. In light of the
23 current NRC initiative to mandate host states use
24 site-specific WAC to determine facility compliance,
25 isn't the answer to require the disposal facility to

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1 perform sampling and independent analysis on waste after
2 it arrives at the disposal site?"

3 MR. CAMERON: Thank you for those, Loren.
4 Oh, you only read the first one. Okay. We're going to
5 back to Loren Morton's second one. We're going to go to
6 the first one. Billy.

7 MR. COX: I guess I'm not convinced that the
8 interest and needs of the disposal are really that much
9 different from the generator. I think everybody wants
10 to dispose of their waste in a safe manner. But what I
11 would say to this is, as I stated earlier, you know,
12 sampling radioactive waste is not an easy thing to do.

13 There's considerations for ALARA and things
14 like that, as well as reasonably achievable, keep your
15 exposure as low as reasonably achievable or ALARA. So
16 I would say that radioactive waste sampling at the
17 licensee level is a very well-regulated and inspected
18 process.

19 It's not -- in my mind, it's not something
20 that the disposal sites necessarily need to verify.
21 There is a process here in the manifesting guidance now
22 where we're compounding errors, and we need to fix that.
23 But for the sampling and analysis process and
24 characterization and classification process for
25 radioactive waste that's done now, I think that it's a

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1 fairly accurate process.

2 These are things that are internal audits
3 are done, external audits are done and error reporting.
4 There's quality requirements on the generator. There's
5 quality requirements on the laboratories. It's looked
6 at from a lot of different angles and, you know, to my
7 knowledge, it's not like there's been a tremendous amount
8 of significant error found in any of this process.

9 So I don't think that it's something that
10 really needs to be looked at again. I think it would be
11 an unnecessary cost at a disposal site. I think it would
12 be unnecessary dose at a disposal site, for the benefit
13 or lack thereof that would be gained by it.

14 MR. CAMERON: Okay. Thanks, Billy, and
15 we're going to go to Joe Weisman, and then we're going
16 to go to Bill Dornsife.

17 MR. WEISMAN: Two comments based on the
18 webinar, and correct me if I'm wrong by the NRC folks in
19 the room, but I think he stated that there is a mandate
20 for a performance assessment by the sites, and when the
21 -- it's my understanding, as part of this rulemaking,
22 that it will be an option for sites to pursue to a
23 site-specific performance assessment and their own WAC.
24 It's not a mandate by the NRC.

25 MR. CAMERON: And Chris, you want to just

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1 clarify that, because that's important?

2 MR. MCKENNEY: It's Chris McKenney of the
3 U.S. Nuclear Regulatory Commission. In the draft
4 proposed ruling which we did put out in December in the
5 docket, and for comment at the time, the WAC, the Waste
6 Acceptance Criteria, the site-specific waste acceptance
7 criteria proposal is for an option.

8 They can continue. The site would be also
9 able to continue to use the current waste classification
10 tables as their WAC, or they could create a new
11 site-specific waste acceptance criteria.

12 MR. CAMERON: Thank you, Joe and thank you
13 Chris, for that.

14 MR. WEISMAN: Chip? Oh, I'm sorry. I had
15 one other little comment.

16 MR. CAMERON: Oh, go ahead.

17 MR. WEISMAN: Yeah. I was just adding on
18 to what Billy said here. We also would not support, you
19 know, on-site waste characterization or confirmatory
20 sampling at our site, for two reasons. Like what Billy
21 said, with the ALARA constraints, we certainly don't want
22 to open up a high integrity container and take a sample
23 of resin. It's just not a safe thing to do, when the
24 waste gets to our facility.

25 We do as much remote handling as we can.

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1 We'd like to take it, you know, with a crane, put into
2 our -- and we can accomplish the same objectives by doing
3 quality assurance audits of the generator and of the
4 laboratories.

5 If we could certify a program, that their
6 characterization is accurate and representative and
7 consistent with what the industry does, there really
8 isn't a need for us to do confirmatory sampling once the
9 waste hits our site.

10 MR. CAMERON: Okay, good. I'm glad we're
11 nailing this one, and Bill?

12 MR. DORNIFE: Yeah. In Texas, we're
13 required by our license to either sample the waste coming
14 in on a certain frequency, or if it's higher activity and
15 presents an exposure problem, to actually go out and
16 audit, you know, do a process review like the NRC does,
17 at generators.

18 We're also allowed to accept the NRC's
19 process for looking at generators, you know, obviously
20 at nuclear power plants. But and I think, you know,
21 obviously that will provide, once we start implementing
22 it and getting data, it will provide good information of
23 how good the data is, and how -- and whether this kind
24 of a program really needs to be in place.

25 Where we've had problems is with, we have

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1 an SNM exemption from the NRC, and we've had much more
2 problems in terms of the SNM exemption verification,
3 sampling verification that we've had to do. First of
4 all, you recognize that, you know, a site doesn't
5 necessarily have their on-site laboratory to do these
6 very sophisticated analysis.

7 So there could be a significant delay from
8 the time you receive the waste until it gets disposed of,
9 based on getting the results back from the laboratory.
10 So that's a problem both with, you know, the waste we're
11 accepting and also with our SNM verification.

12 But on several occasions, we've had SNM. I
13 think for the most part the verification is going to show
14 that the numbers we're getting are conservative. Except
15 in the SNM case, we've had a couple of cases where they
16 were not conservative, and I think that's just the result
17 of the DOE characterization of the waste, and some of the
18 techniques that were used in terms of looking at the SNM
19 content.

20 MR. CAMERON: Okay, thank you on that. I
21 see that two other panelists want to comment on this. So
22 let's go to Paul and Don. Paul?

23 MR. BLACK: Just quick thoughts on the need
24 for the disposal facility to be sampling, and as John said
25 earlier, a lot of the focus of this discussion has been

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1 on power plant waste, and it doesn't have to be. The
2 regulations apply to all forms of waste.

3 So there's a chance for a lot of uncertainty
4 here that's not been addressed fully, and I kind of use
5 Clive as an example again in the Savannah River waste.

6 So my response to the question earlier was
7 accurate. When we've reanalyzed the Savannah River
8 data, we didn't come up with anything different. We were
9 just looking at it for uncertainty.

10 But one thing with the Savannah River data,
11 because they were doing sampling for waste acceptance in
12 effect at the time, was they produced results for DU.
13 They did not produce results for uranium-238 and
14 uranium-234 and the other isotopes that we could use
15 directly. There was some other data that they did have
16 that was nuclide-specific.

17 But as a consequence of them not having
18 direct concentration data for those other nuclides, we
19 asked EnergySolutions if they would take some samples so
20 they could be analyzed, so we could get data for those
21 nuclides specifically. So Sean arranged for that to
22 happen, and the interesting aspect of it is the results
23 did not come back the same as Savannah River had. The
24 concentrations were lower for uranium.

25 I think we all think we know what the decay

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1 constants are, but the data didn't match those decay
2 constants at all. I mean ten years. Nothing should
3 have happened. The results are very different. These
4 are analytical lab differences. I mean it's another
5 factor that perhaps should be considered sometimes.

6 MR. CAMERON: Okay, and we may have
7 something related to that soon. Don.

8 MR. LOWMAN: Yeah. I just wanted to say
9 something on other generators. As Larry mentioned,
10 we'll be having two other webinars, and the focus of this
11 meeting, since everyone was out here we were capturing
12 Waste Management, and that's probably why it's more
13 targeted towards the power plants right now. But that's
14 not the intent. We will be looking at other generators.

15 MR. CAMERON: Okay, thanks.

16 MR. LOWMAN: And one other point that Paul
17 had made earlier, about not using manifest data in the
18 PAs. I guess, you know, this issue has been around for
19 a long time, the tech and iodine, and from what I
20 remember, it all came about when there was a possibility
21 of new sites coming online, all the compacts.

22 So they were taking the manifest data and
23 the existing site data and plugging it in their PAs, and
24 that's where they saw the problem that oh, it's going to
25 be an issue in the future. So maybe that is something

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1 to look at.

2 MR. CAMERON: Okay. Thank you, Don, for
3 that. We have, there's one other really, I think,
4 pertinent point that Loren has raised, and I should have
5 introduced Karen. Karen Pinkston from the NRC technical
6 staff is helping with the webinar.

7 Could you just read Loren's question, and
8 I think it's going to be for Chris McKenney actually, but
9 go ahead.

10 MS. PINKSTON: Go ahead. Okay. The
11 question is for the NRC, and it is "Why hasn't the NRC
12 promulgated approved analytical methods for waste
13 analysis in the regulations?"

14 MR. CAMERON: Isn't that the question to be
15 answered by Chris?

16 MR. MCKENNEY: Can you repeat the question?

17 MS. PINKSTON: Okay. "Why hasn't the NRC
18 promulgated approved analytical methods for waste
19 analysis in the regulations?"

20 MR. MCKENNEY: There's an inspection
21 procedure for it. All right. I'll say it into the mic,
22 or I'm going to walk into it. One is is that I think it's
23 not in the philosophy of the Nuclear Regulatory
24 Commission to actually, in our regulations, put in the
25 exact analytical methods to be used.

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1 That is the purpose of our reg guides and
2 guidance on how to meet a risk-informed
3 performance-based set of regulations, and so even, you
4 know, that's exactly in the Part 61 cases why we don't
5 specify waste forms.

6 We don't specify exact features of the waste
7 disposal site, and we don't specify exact designs of
8 proper casks, to give flexibility, to give innovation a
9 chance and to work over the time.

10 That said, we did, have worked with the EPA
11 and the DOE to establish interagency guidance on proper
12 testing methods and laboratory protocols. But again,
13 that's a guidance document and not part of the
14 regulations.

15 MR. CAMERON: Great. Thank you Chris, and
16 thank you Loren for those questions and to both of the
17 Michaels. We're ready to take a break. We're going to
18 give probably one opportunity. Go ahead, Boby.

19 MR. ABU-EID: Yes. Just once on that
20 question. The federal agencies, they got together and
21 they did develop multi-agency radiological laboratory
22 analytical protocols, though it is not specific for
23 radioactive waste, but waste generators or people
24 working in the waste area, they will try and model that.

25 It's very, very, very useful, that describe

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1 the methods and the techniques. For example, LLD is very
2 well defined statistically in model. So therefore, we
3 do not need to reinvent the wheel and all federal agencies
4 they agreed on that. There are other areas of analytical
5 models they are described.

6 However, to add to this, actually a method,
7 which is STP1102. The title of this, I'll read it for
8 you, is called "Radioactive and Mixed Waste Problems and
9 Strategies" in 10 C.F.R. Part 61. They do analytical
10 techniques. So this actually describes exactly the
11 methods, and this is authored by Benavali and McCurdy.
12 This was in 1991.

13 So I would say this is the one, and they give
14 actually the MDL values for that. So therefore, this
15 could be used as a reference. But the NRC does not have
16 a specific method. I don't believe that we should have
17 a specific method. We should have flexibility, but we
18 may look and review the methods if there are new ones.

19 Regarding the LLDs, again the technology is
20 developing. I think this is more of ambiguous when you
21 say LLD, because it's used, for example, ICP mass
22 spectrometry or UCGC mass spectrometry. If you analyze
23 carbon-14, for example, the level of detection or the
24 limits of detection would be completely different.

25 So therefore, I would suggest that the LLD,

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1 it is good to have it as reference. But they used in the
2 early 80's, they were using with chemistry and with
3 chemical separation, which has very large instabilities
4 in it. Therefore, I would say that yeah, you need to talk
5 about the method when you say the LLD.

6 The other factor I think is scaling factor
7 is current I agree, that is scaling factor which has been
8 internationally used, and there are different methods
9 for the scaling factors. And then to raise a question
10 maybe later after that, what kind of scaling factor that
11 model that you want to use, without using the linear model
12 or use the non-linear model that is described in either
13 standard. Thank you.

14 MR. CAMERON: Thank you. Thank you, Bobby.
15 We're going to take a break now. Tracy, we're going on
16 a break. It's 10:30 Mountain Time by my watch. Let's
17 take 15 minutes and come back and we'll get started.
18 Thank you.

19 (Whereupon, a short recess was taken.)

20 Facilitated Public Discussions

21 MR. CAMERON: We'll start the second part
22 of the discussion, and hi Tracy? Are you still with us?

23 OPERATOR: Yes.

24 MR. CAMERON: Okay, good. We're going to
25 get started. Well thank you all. That was a pretty good

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1 discussion of these topics, and I don't have a real plan
2 for proceeding with the second part of the discussion.

3 But I thought that I would just go through
4 some of the things that I heard all of you say, and I mean
5 not just panelists but audience, and also just go down
6 the parking lot issues.

7 We can decide what issues are important for
8 discussion, and Don is keeping track of some of these
9 other issues too. These are all prime candidates, okay,
10 for discussion. So these are not meant to be
11 characterized with any precision. So if we need to
12 correct or caveat, we can do that.

13 But we all agree that the reporting is
14 misleading in terms of what's going to the sites. One
15 of the things that we heard is that well, there may be
16 some answer to the problem in terms of how the disposal
17 sites look at their performance assessments, and I always
18 have to put Bill's large Kd in there as sort of a marker
19 on that.

20 I don't understand what it means, but I know
21 all of you do. But that was part of that discussion.
22 But even though the disposal sites can do something, it
23 was pretty much agreed we still need better numbers from
24 generators, and the question is how do you do this?

25 We talked a lot about ask the labs,

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1 generators ask the labs to look lower. But there were
2 some practical consequences of that and feasibility of
3 being able to do that. We had some discussion of scaling
4 factors, and some examples that -- there's examples from
5 international experience, where scaling factors are
6 used.

7 This ties into the may, what I'm calling the
8 "may" or "must" issue. In other words, gives the
9 generators some flexibility in what they do, and gives
10 them some guidance at NRC is give them some guidance on
11 what options they can address, and that ties in with
12 something that was said earlier, about let's give the
13 generators flexibility, okay.

14 Overarching issue brought up by several
15 people, but characterized by Lisa Edwards as accuracy
16 versus compliance. I had it characterized in the
17 parking lot as "fear of compliance that doesn't happen,"
18 you know. We don't want to use that when there's a state
19 regulator and NRC in the room.

20 So I think accuracy versus compliance, a
21 good way to state that, and I don't know how important
22 this is. But someone said why can't we, should we have
23 a definition? Do we need a definition of LLD in the
24 guidance?

25 This one is an intriguing one to me, because

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1 I think it goes back to getting this better number from
2 the generator, and I think I'm right in saying what's the
3 DQO, okay, data quality objective, that was mentioned by
4 Paul but also by Billy, and I don't know if this refers
5 to a process or not.

6 But it ties into this parking lot issue.
7 Let's develop a basis for the numbers, and my question
8 there is who, also who does that and Paul mentioned also
9 that you have to look at the uncertainties. One way that
10 Neptune did this was to go back and actually look at the
11 actual data from SRS, okay.

12 Parking lot items, John Tauxe reminded us
13 that you know, there are other generators besides
14 reactors we need to look at. Not just the generators
15 that's an issue, but the processors and the shippers, and
16 that tied into the accuracy versus, you know, compliance
17 issue, as everybody's driven by the compliance issue, and
18 again, develop the basis for the numbers.

19 So with that, where should we -- how do you
20 want to begin our discussion, which is going to go until
21 about 12:15 or so, whenever we run out of steam, although
22 I think that this crew could go on for a long time. But
23 I'd like to see if we could get to the phones and the web
24 by about 12:15, and let them raise their questions, and
25 also have all of you comment on those.

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1 I think we're scheduled for Larry -- not
2 Larry, but Aby, Aby Mohseni, to sort of give us a sum-up
3 final statement at 12:45, and then we were going to
4 adjourn at one o'clock, for all of who have planes or
5 whatever, plants, planes. Let me hear from the NRC first
6 on how we begin on this. Don?

7 MR. LOWMAN: Well, I think one thing else
8 for the parking lot, as Larry was saying, is if there are
9 changes we need to do with the NUREG, exactly what those
10 are.

11 We haven't really got to that discussion,
12 and I don't think we got to the discussion of what's the
13 consequences of putting a zero on the manifest. We don't
14 do it in the 121 report. So are we going to be -- what's
15 the consequence of putting zero?

16 MR. CAMERON: Well, maybe the idea of that,
17 we heard several suggestions for how the NUREG -- oh,
18 thank you. We heard several suggestions for how the
19 NUREG could be changed, where maybe we should
20 systematically go down through those. But maybe we'll
21 address that question first, of what's the consequences
22 of a zero.

23 But let's go to Bill Dornsife, and then
24 we'll go to Billy. Bill?

25 MR. DORNSIFE: Yeah. I guess before we

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1 leave the discussion we had this morning, we didn't talk
2 very much about the other radionuclides. I think first
3 of all, tritium is not an issue for most sites, unless
4 you have a significant groundwater pathway, but it decays
5 away before it gets anywhere.

6 Carbon-14, I guess, is most often actually
7 detected in resins than it's not, and I guess for
8 irradiated hardware, it's a computer code. I guess I'd
9 like some idea of how accurate people think those
10 characterizations are for carbon-14.

11 For chlorine-36, you know, we kind of raised
12 this issue, and the reason we did, we found out, was that
13 we were required to use an unrealistic source term in our
14 initial performance assessment in our license
15 application by our regulator. We used RESRAD and it
16 dominated the doses for groundwater.

17 In our more recent PAs, we've refined the
18 groundwater pathway and other than that legacy pathway
19 we still have from the application, we determined there
20 really is no groundwater pathway at our site. So the
21 chlorine-36 issue has really gone away for us, at least
22 from the standpoint of what's in utility waste.

23 Now I think NRC could do some sort of a
24 generic analysis that basically shows, at least for
25 reactors, that you know, utilities have very -- it all

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1 comes from chlorine that's dissolved in the coolant and
2 gets activated.

3 So you can estimate, you know, based on the
4 quality control programs that utilities have for their
5 reactor coolant, you could estimate a maximum value for
6 chlorine-36, based on, you know, what the maximum could
7 be, the water quality requirements in the reactor
8 coolant.

9 Based on those numbers, you could see if it
10 indeed is an issue or not. So you know, determine and
11 provide guidance of whether anybody really needs to look
12 for chlorine-36, because right now nobody is, because
13 it's not a class-driving radionuclide.

14 Now I don't know, I have no real good idea
15 of how much is generated by other folks, you know. Most
16 of our chlorine came from resins in our initial source
17 term. So --

18 MR. CAMERON: Okay. Before we go on to
19 discuss that, I've listed that up here as an agenda item,
20 along with how to change the NUREG consequences of zero.
21 So let's see what Billy has to suggest as an agenda item,
22 and then let's go back and we can start, go back to that
23 discussion on 36 and 14. Billy.

24 MR. COX: Thanks, Chip. This kind of comes
25 back to what we were talking about before the break a

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1 little bit, and it directly relates to Larry's and Don's
2 question, and that's, you know, suggestions for how do
3 we perhaps provide different guidance, and also what's
4 the impact on other, other than utility generators.

5 So I think that, you know, in general terms,
6 I think that Clint probably suggested a fairly reasonable
7 approach, which is, you know, there's some sequence of
8 options. You still look. If it's a non-detect, there's
9 things that you can do. You may have site-specific
10 scaling factors, or you can use these generic scaling
11 factors, or you may have other process knowledge.

12 Now we need to make sure that we qualify that
13 when we talk about utility waste, that we're talking
14 about, you know, uranium, the fission of uranium. But
15 I have some data on non-utility waste, and in terms of
16 activity, probably 90 percent of the disposal activity
17 in U.S. disposal sites is from utility generators.

18 But the majority of that is from activated
19 metal. So when you take activated metal out of the
20 picture, actually there's more non-utility waste than
21 there is utility waste. But the difference to the
22 majority of non-utility generators is that there's,
23 they're not as often dealing with a mix. There's process
24 knowledge.

25 If you look at the percent of activity that

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1 comes from non-utility generators, cobalt-60 comes from
2 our four-year database that we've submitted to the NRC
3 before. Cobalt-60 is 45 percent. So I mean it looks
4 like source disposals to me and maybe research, but
5 cobalt-60. Tritium is 40 percent.

6 So I mean these people have process
7 knowledge that they are disposing of tritium, and it may
8 indeed be the only thing on their manifest. It's
9 different.

10 What skews the disposal site inventory the
11 most, in terms of these hard to measure nuclides,
12 especially tech-99 and 129 is not the non-utility waste.
13 It's the utility waste. Tech-99 and iodine-129 are not
14 predominant nuclides in non-utility waste.

15 MR. CAMERON: So the big issue is the utility
16 waste?

17 MR. COX: The utility waste is what's
18 propagating the error, and creating a larger number.
19 It's not the non-utility waste for these particular ones.
20 The guidance allows someone that's just working with
21 tritium, to put NP for "not present" on the manifest for
22 the other nuclides, because it's not in their process.

23 But in power reactors, we really honestly
24 can't say that it's zero. We can't say it's not present,
25 because we know there's a generation mechanism there and

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1 a pathway to waste. So I think that addresses some of
2 the non-utility waste issues.

3 MR. CAMERON: So that's very good. Thank
4 you for that.

5 MR. LOWMAN: Just real quick. Non-utility
6 waste, that's government waste, being the DOE, I'm not
7 sure. I saw Linda, but I don't know if she's still here.
8 Maybe she could, at some point, explain what they do.

9 MR. DORNIFE: DOE is a whole other ball
10 game.

11 MR. LOWMAN: Yeah.

12 MR. CAMERON: Okay. But Linda will be,
13 will be back. We're still doing some agenda-building
14 here, getting rid of some issues in the parking lot. In
15 terms of changing the NUREG, Billy referred back to one
16 of the big suggestions, I think, that we got from Clint
17 Miller today, is to give generators options to consider,
18 okay, scaling factors, lab work, whatever.

19 We can flesh that out a little bit, but I
20 think that's one important idea for changing the NUREG,
21 and Paul, on agenda-building, is that, you want to talk
22 about an issue, specific issue that we should put on the
23 agenda for discussion, or do you want to chime in on some
24 of these things that we've been talking about now?

25 MR. BLACK: I've got -- just first, I can

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1 go back to what John said earlier, that there are other
2 generators. Billy's just addressed that to some extent,
3 but there still are. There's also other nuclides, and
4 a lot of waste manifesting is conservative.

5 I understand that the Phantom 4 are
6 critically important from a PA perspective and transport
7 perspective. But there are other nuclides in waste
8 streams that are also being entered onto manifests in
9 conservative ways.

10 They're entered on there because there are
11 waste acceptance criteria, and often those are the
12 numbers that appear on the manifest. We're just saying
13 yeah, it's less than this, so we can ship it. None of
14 that is helping PA work.

15 MR. CAMERON: Okay. Sean?

16 MR. McCANDLESS: Chip, if you're working on
17 building agenda items for the remainder of this morning's
18 discussion, one thing that was in, I think, some of the
19 introductory slides and materials was the question of
20 attribution. Since we're talking about the entire
21 NUREG, the 542 is also within the scope of the
22 conversation.

23 I know that Utah is interested certainly
24 when waste is attributed to a processor, and the
25 Northwest Compact are certainly interested in the

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1 originating state and source of that waste. So we
2 probably ought not drop that from our discussion here.

3 MR. CAMERON: Okay, thanks Sean. We've
4 heard attribution a lot. I would say that we start with
5 how should the NUREG be changed, add onto this list. But
6 one of the things I want to check in with particularly
7 Paul and Billy about, and we'll -- I'll go back to you,
8 Lisa, in a second, is this idea about developing a basis
9 for the numbers.

10 I don't know whether that relates to the
11 DQOs. I just want to make sure that we don't miss a major
12 piece, major analysis that should be done, and I'm not
13 sure about the best way to characterize that, other than
14 -- I'm not sure what's involved with this, but is this
15 an agenda item we should discuss, how you do it, Paul?

16 MR. BLACK: Well, I think there's some
17 analysis that can be done, and we're working with Billy
18 at the moment to go forward with some of that. But I
19 think the end result of it is something that Lisa said
20 and others have said. We're going to end up with scaling
21 factors, and that's probably where we need to go towards.

22 We need something rewritten in the
23 guidance, but we also need something that's
24 implementable from a generator's perspective. So I
25 think when we do analysis of the data, we might come up

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1 with things that we say and report on it, but that has
2 to be translated into something that's useable, and
3 something that's useable at the end of the day, it's
4 probably a table.

5 This again goes back to this issue of maybe
6 we need to separate, to some extent, what how manifesting
7 works versus information that can be used in a PA, because
8 in a PA, we want not just numbers; we want uncertainty.
9 We want probability distributions, and I doubt that
10 generators really want to have to go there.

11 MR. CAMERON: Okay. We'll hold that,
12 Billy, go ahead.

13 MR. COX: I would just follow up on your
14 question a little bit. Our research this year with
15 Neptune is focused on looking at the Part 61 analyses
16 methods in the laboratory for specifically carbon-14,
17 iodine-129 and tech-99, to demonstrate the argument
18 that, you know, for the method being used, these numbers
19 really are zero.

20 We know that to -- we believe that the
21 scaling factor basis and the over-reporting basis has
22 already been well-documented by EPRI, by in NRC research
23 and in DOE research, so -- and there's actually a pretty
24 good basis for scaling factors in that too, were we to
25 go to that.

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1 I'm not sure that a lot more work needs to
2 be done around developing what could be used as scaling
3 factors, other than evaluating the data that's already
4 out there.

5 MR. CAMERON: Okay. Bill, does that tie in
6 to what your concerns were with 14 and 36, or is that two
7 separate issues?

8 MR. DORNIFE: Well, I think it's somewhat
9 --

10 MR. CAMERON: And you'll have to -- we
11 always need to remember to bring that mic closer.

12 MR. DORNIFE: I think it's some, the
13 issues are somewhat separate. I mean I'd just like to
14 get the feedback from EPRI, you know, if they think the
15 carbon-14 data is pretty good, that what we're talking
16 about doesn't apply to carbon-14, you know. Secondly,
17 I'd like to, you know, agree on something to resolve this
18 chlorine-36 issue.

19 MR. CAMERON: Okay, Billy.

20 MR. COX: Umm, I would say that the
21 carbon-14 data is probably, if people are measuring it
22 and reporting it, it's probably pretty good. I think
23 that we bounce around the detection limit right now,
24 because that's just about where the real activity is.

25 So maybe we do need to look a little harder.

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1 It can be, it's easy to look ten times lower for
2 carbon-14. We can do that, and I think that's kind of
3 one of the suggestions that we made, was it seems like
4 we could probably go to one percent of Table 1 and Part
5 61 instead of ten percent. So I think that that should
6 resolve itself.

7 Carbon-14 doesn't scale very well. It's a
8 coolant nuclide. It's an activation of coolant,
9 nitrogen and coolant. So if you have ammonia and coolant
10 or dissolved nitrogen and coolant, that's where
11 carbon-14 comes from.

12 It's very pH dependent on whether it ends
13 up in waste or not, because of the form that it's in. So
14 I almost don't -- I almost think that utility generators,
15 barring other process knowledge, are probably in general
16 better off looking for it, and just using the numbers that
17 they get from the analysis.

18 If they get an LLD number, I'm not quite sure
19 what to do with that. I guess I haven't thought that far
20 through it. But I mean in that instance, you know, zero
21 might be appropriate. I don't know. Where people are
22 finding it is inconsistent. Some people see it in
23 filters, some don't. Some people see it in resin, some
24 don't. So I think we need to look harder.

25 MR. CAMERON: Okay.

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1 MR. DORNSIFE: I guess just a couple of
2 clarifying. How about irradiated hardware? Has that
3 been validated?

4 MR. COX: I think the numbers in activated
5 metal are probably pretty good, because we have a good
6 feeling for the amount of carbon that's in steel. But
7 I would defer to Tom Kalinowski for a comment on that,
8 because he's most intimate with our research on that.

9 MR. CAMERON: Okay. Did we want to --

10 MR. DORNSIFE: One more thing about
11 carbon-14, this chemical form issue is extremely
12 important for carbon-14, because most PAs assume it's in
13 the gaseous form, and it's available for release
14 immediately, you know, from cell, and recognize that your
15 dose limit for the air pathway is less than 25. You have
16 to use EPA Appendix I, 10 millirem.

17 MR. CAMERON: I know where this is maybe
18 getting, it's an important issue. Maybe we're getting
19 a little down in the weeds, beyond what the NRC staff
20 needs to do here. And Tom, if you could just be patient,
21 we'll get you on this particular issue.

22 But I want to go back to this how should we
23 change the NUREG, and talk about that a little bit. But
24 I wanted to ask Lisa, did you have an agenda item for us?

25 MS. EDWARDS: Yeah. From my listening to

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1 the discussion and my own notes for the agenda, I think
2 you could include a bullet point for determining the LLD
3 value, whether you want to use, define LLD value as
4 something different than one percent of Class C, say
5 change it to one percent of Class A. I think including
6 a methodology for how you calculate an LLD should go on
7 the agenda.

8 I think an agenda item is determining the
9 regulatory impact of less than one percent of Class A.
10 While we will promote EPRI methodologies to give a number
11 that's less than the LLD, regulatory space might consider
12 less than one percent to be below your level of concern.

13 And I think an agenda item is offering up
14 an option for using modeling codes, not just generic
15 scaling factors.

16 MR. CAMERON: Okay. I'm going to put LLDs
17 as shorthand, okay. There's a bunch of issues there.
18 The last one may tie into the first item we have up there.
19 So did you want to suggest an agenda item?

20 MR. MOHSENI: Yes, an agenda item relative
21 to --

22 MR. CAMERON: Aby Mohseni.

23 MR. MOHSENI: Aby Mohseni, yes. Relative
24 to the revisions to the NUREG, based on the conversations
25 we're hearing, Chip, I think a statement of the problem

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1 basically limits the usefulness, if you will, of the
2 changes that NUREGs could do.

3 I think that the accuracy and the
4 uncertainty analysis that goes with the parameters that
5 are at stake here. It's really an implementation issue
6 of a higher level of requirements.

7 Ultimately, the end point is the
8 performance assessment ought to have a reasonable
9 parameter input, with some rationalization of why the
10 uncertainties allow it to be used in the form that's being
11 used.

12 So there is certainly a commitment by the
13 NRC that it won't be an obstacle where the NUREG's would
14 be removed, no question. The question is how you resolve
15 ultimately the question of a non-zero value that's
16 acceptable.

17 In the range of using, the past history of
18 using LLDs seem to be convenient to the old days, because
19 the cumulative effect was not at stake. Now we have the
20 cumulative effect of using and summing LLDs over time.
21 Now there's a huge policy issue, because you're
22 jeopardizing the availability of disposal space.

23 NRC's concern is health and safety, which
24 means if you don't justify, you have to justify why a zero
25 value is being used, not so much why an LLD is being used.

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1 So the NUREG will help remove the obstacles
2 that force you guys to pretend that NRC's really adamant
3 about an upper bound, as opposed to a lower bound. A
4 lower bound is why a zero value is justified.

5 So I think, in that context, if the agenda
6 or the discussion could focus more on how you guys resolve
7 the issue. It's really an industry issue, not so much
8 a NUREG issue, which we can address, and I think that,
9 to a great extent, can remove some of the limitations that
10 might have been imposed over time. Thanks.

11 MR. CAMERON: Okay. We're going to build
12 this agenda until quarter to one.

13 MR. CAMPER: Well, Larry Camper, NRC. I
14 may have misunderstood what you said, Lisa, or I may have
15 misunderstood what others said about this notion of below
16 a level of regulatory concern.

17 (Off record comment.)

18 MR. CAMPER: Okay, because clearly that's
19 beyond the scope of what we're trying to focus upon here,
20 and I think we all understand what's associated with that
21 type of. So I may have misunderstood, but --

22 MR. CAMERON: All right.

23 (Off record comment.)

24 MR. CAMERON: Sure.

25 MS. EDWARDS: So in Reg Guide 1.21, there's

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1 rules on what you do and don't report. So I really should
2 have used an analogy like that. Those words are maybe
3 inflammatory.

4 MR. CAMERON: Okay, all right. We don't
5 want any inflammatory stuff, and Aby, I think I get the
6 drift of what you're saying, and I know that the most
7 important thing, as all of these people do, and I saw Paul
8 understood what you were saying.

9 We do have this consequences of zero that
10 Don had put on the board for us, and maybe the concerns
11 that you're talking about we can surface those when we
12 go to a discussion of that. Okay, and I'm going to add
13 -- Lisa, I think you're modeling fits in here perhaps.

14 I'm not sure, but the first idea was give
15 generators flexibility, okay, and I do want to try to keep
16 it to the panel for now, and we'll go back out.

17 But let's keep it to the panel. But let's
18 go through -- I'm going to go to Paul, but let's see if
19 we can systematically go through all of the suggested
20 changes that you would recommend to the NRC, for how the
21 NUREG should be changed.

22 This seems to be a pretty important change.
23 Are there other changes? But Paul, go ahead.

24 MR. BLACK: Well, just one comment, back to
25 on what Lisa said and what Aby said, is I think the focus

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1 of the discussion is LLDs, but I'll go back to what Lloyd
2 Currie said and what I believe is LLDs are data-based
3 decisions. We need to look at data.

4 That's what we should be doing here.
5 That's the difference, I think, that needs to happen
6 here, and as Billy said, what we're doing within is
7 looking at data, to see if anything's really there, is
8 a zero. Well, for carbon, you should look at the data
9 and come up with what do we think is going on from a data
10 perspective.

11 That's what ends up in the PA. It's not a
12 bunch of LLDs that aren't data-based. We need to look
13 at data.

14 MR. CAMERON: Okay, thank you. Do you want
15 to respond to that, Billy?

16 MR. COX: Well yeah. I think Paul's
17 exactly right. It's not, I think there's two different
18 issues here. One is, you know, what's reasonable? How
19 low is reasonable to look for, however you determine that
20 number? If you use Currie's LLD value or some other
21 process, decision process that, you know, people may feel
22 is more appropriate.

23 But as far as the consequences of zero go,
24 I think that I was pretty clear in that we believe that,
25 EPRI believes that using LLD value is wrong, but using

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1 zero is wrong too, because it understates inventory.

2 There's a real number in there that has a
3 statistical basis in data that exists, and that number
4 should be put in there with as much certainty as we can
5 form around it, right, and realistically, a lot of that's
6 based on scaling factors.

7 MR. BLACK: Just a quick response on it, is
8 I agree entirely. So the other thing on sensitivity.
9 We're talking about LLDs, but it's really sensitivity or
10 uncertainty, and counting statistics, a fuss on
11 statistics, where we add things up that goes along with
12 it.

13 So if you have a lot of samples, you're
14 dealing with the sensitivity along the way. If you don't
15 need a one sample, then maybe you need to think about that
16 sensitivity. We have to count data. We know what the
17 sensitivity is. It's not clear that we need LLDs that
18 are ten percent lower, when we have a lot of data.

19 This is going back to thinking through and
20 it's sort of retrospective DQOs on the data you already
21 have. You have a lot of data, and the process isn't
22 changing very much.

23 So we have process knowledge, a lot of data.
24 That should be used to help us go forward. My guess is
25 your sampling regime is probably fine, but we can

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1 probably find a justification for it as well.

2 You have adequate sensitivity already, if
3 we look at the information, the data that are actually
4 there, instead of focusing on LLDs.

5 MR. CAMERON: Okay.

6 MR. COX: Regardless, the regulator will
7 still tell us, tell the industry how hard they have to
8 look, because that's something that they do now, unless
9 they take that out of the BTP in the NUREG.

10 MR. CAMERON: So what would they take out
11 of the NUREG?

12 MR. COX: They would have to take out the
13 requirement for how far, how well you have to look, and
14 right now that's one percent of Table 1, and one percent
15 of the Class A limits in Table 2. That's in the 1983
16 version of the Branch Technical Position on waste form,
17 that hasn't been superceded.

18 It's in the section that wasn't superceded
19 by the '91 and the '95 BTPs, and it's pretty much mirrored
20 in the NUREG. So if we're going to, whatever we do for
21 looking, what sensitivity that we want to analyze samples
22 for, because I believe that it's reasonable that we keep
23 looking.

24 You know, these things have their own
25 production mechanisms, and we should do a reasonable

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1 analysis to verify that they're at some level or they're
2 not.

3 Then what we do with that decision point,
4 that I'm 95 percent sure that there's nothing there below
5 this number, is a topic for what options we give
6 generators to use in place of manifesting that value.

7 MR. CAMERON: Okay. So let me see if I got
8 this straight here, is that one of the things that you
9 said is that the NRC could take out or change that part
10 of the NUREG that says how hard you have to look, and
11 perhaps the statements that Lisa gave us were some things
12 that could be automatically eliminated, that you would
13 have to look for.

14 But basically what you're saying is take
15 out, revise that part of the NUREG; is that right, or no?

16 MR. COX: It is in the NUREG. It's in
17 there, and it's in the 1983 BTP. No, I'm not saying that,
18 you know. Quite honestly, I mean Paul and I, we haven't
19 talked about this a lot, but I don't have a big problem
20 with the numbers being in there, and I honestly believe
21 that if we look ten times harder for carbon-14, the data
22 would probably look a lot better, because I think we're
23 bouncing around decision point right now.

24 But you know regardless, I think that the
25 regulator probably has some comfort in looking to some

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1 certain level, and I don't think they're going to be
2 taking -- I don't see some required sensitivity coming
3 out of there.

4 MR. CAMERON: Okay.

5 MR. COX: There's required sensitivity in
6 effluents, and there's required sensitivity in waste
7 classification, and I don't see that changing.

8 MR. CAMERON: So leave required
9 sensitivity in?

10 MR. COX: Right. Whatever terms you want
11 to call it. There's some value in there. Now we call
12 it LLD. I don't pretend to understand, you know, what
13 we might want to change that to. I don't think that's
14 critical to this discussion, as to, you know, if we change
15 to a different method.

16 MR. CAMERON: Okay, but just one other
17 clarification that I need to ask you is you did suggest
18 that there should be some analysis done, to find out where
19 there really is a zero. I don't know who does that, but
20 --

21 MR. COX: We know from the mass
22 spectrometry analyses that have been done, where using
23 radiochemistry you end up at that decision point, do I
24 use this value or do I use zero, okay. We know from
25 analyses, more sensitive analyses that have been done,

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1 that's the analyses that developed the scaling factors
2 in NUREG/CR-6567.

3 We know that there's a value greater than
4 zero there in reactor waste. It's a very small value,
5 but if cesium-137 is present, if other fission products
6 are present, then it stands to reason that tech-99 and
7 iodine-129 are present as well. They have production
8 mechanisms in fission; they have equilibrium core
9 inventories; and they have release processes from the
10 clad.

11 So we know there's a number there that's
12 greater than zero, and it's probably very close to the
13 scaling factors in this NUREG, and the scaling factors
14 that other countries use, because all the numbers are
15 fairly close.

16 MR. CAMERON: Okay, thanks Billy. We're
17 bouncing around between zero and what should change in
18 the NUREG, and I just -- so quickly on, and I keep going
19 back to the first thing that you suggested about adding
20 flexibility into the NUREG.

21 Is that basically give the generator
22 options? Is that what you were talking about by
23 flexibility?

24 MR. WEISMAN: Absolutely.

25 MR. CAMERON: Okay. Great, good.

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1 MR. WEISMAN: If they could expand on the
2 conversation that's in the -- if I can get the direct
3 quote -- on page 12 of the NUREG, to give options. Just
4 expand on the conversation on page 12. Instead of just
5 having LLDs, talk about the -- if you can't meet one
6 percent of Class A limit, then a scaling factor is an
7 appropriate way to approach it.

8 MR. CAMERON: Okay. So that gets into some
9 of the things that Lisa was talking about.

10 MR. WEISMAN: Yes. Of all the things that
11 have been discussed today, that's the essence of what I
12 meant by flexibility.

13 MR. CAMERON: Okay. Now I feel that I have
14 to recognize the NRC managers here, okay. Aby?

15 MR. MOHSENI: Thank you. Again, I want to
16 see if I can contribute to putting us back on where the
17 solution lies. I think a NUREG, by definition, is one
18 where you can meet certain requirements by NRC. It's not
19 the one that actually or is holding you back from actually
20 resolving the issue as you are talking about.

21 The question is what's the solution? Are
22 the generators going to spend the resources necessary to
23 actually help the data quality objectives that you are
24 talking about, so that the non-zero value can be
25 justified in your PA, in the PAs?

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1 So ultimately, solving the NUREG alone,
2 because you know, the NUREG is, you can deviate from it
3 and justify it. It's not the end; it's not our
4 regulation. It's important to kind of find the solution
5 that actually justifies a non-zero value, and then offer
6 that to the NRC or through the states, and hopefully I
7 don't see any reason why you need to solve the NUREG as
8 a prerequisite to solving the problem.

9 While we will improve on the NUREG based on
10 the solutions that you come up with, but it's not a
11 prerequisite for you. We don't have to guess which way
12 you're going to go. You can almost assume if you find
13 a better solution than what's in the NUREG, come forward,
14 and we'll adjust accordingly if necessary the NUREG.
15 But that's not really where the resistance lies.

16 MR. CAMERON: Just I feel I need to ask you
17 this. Are you saying that the industry has to come
18 forward with something to the NRC before you would
19 consider revising the NUREG?

20 MR. MOHSENI: No, I'm not saying that. I'm
21 just saying if you had one more dollar to spend on
22 resolving this issue, put it on where it matters in
23 solving the non-zero, justifying non-zero value that
24 goes into a PA. The NUREG is not stopping you from
25 getting there.

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1 While we're adjusting the NUREG to allow the
2 flexibility you're asking, but it is not the one that
3 actually holds you back. It's important to place your
4 energy and resources, the limited energy and resources
5 you have, on actually solving the problem, as opposed to
6 the NUREG, which we will adjust by observing what you guys
7 are doing.

8 Because our goal, the NUREG is one way of
9 meeting the regulations presumably, and the LLD would
10 have done that. But if the LLD is causing other problems
11 for you guys, then offer a better solution and move
12 forward.

13 MR. CAMERON: Okay, thanks Aby. I don't
14 know if that was what you were going to say, Don, okay.
15 Let's go to Bill and Paul and possibly to Sean, if he still
16 has something to say on this. Go ahead, Bill.

17 MR. DORNIFE: Yeah. On that issue Aby
18 that you raised, I think there's a very important role
19 for the disposal site operator and the state regulator
20 to play.

21 I mean NRC is really pushing the
22 site-specific performance assessment, which I totally
23 agree with, and there's a lot of things you can learn from
24 a site-specific performance assessment.

25 You know, what levels are important? Is

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1 zero good enough? You can determine that from a
2 site-specific performance assessment? Do you need to
3 worry about tritium, very obvious? You know, what
4 radionuclides are important and what level of reporting
5 matters to you in your site-specific performance
6 assessment?

7 So I think there's a very significant role,
8 and it's going to vary by sites, of what's really, you
9 know, where the resources need to go to fix the problem.

10 MR. CAMERON: All right. Paul.

11 MR. BLACK: A comment on process and
12 change. So sensitivity, I think, is really the issue for
13 us ultimately to deal with, rather than just calling it
14 LLDs. There's a lot of data already as I've said. The
15 one issue that we find dealing with low count
16 radionuclide data in general is getting the information
17 we really need from the labs.

18 So we need the count data. We need the raw
19 information. That also means we need the background
20 count data, and preferably, especially in a sampling
21 regime like this, where you're sampling about once a year
22 and doing an analysis about once a year, that ambient
23 background data should be run as a dual column.

24 It needs to be right there, side by side with
25 the actual analysis, so that we're subtracting the right

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1 ambient background. If the ambient background's
2 measured once a week, and you don't quite know when the
3 actual sample analysis is, the ambient background data
4 is stealing everything.

5 It's putting far too much uncertainty into
6 the process that doesn't exist. So that there's a lab
7 issue that needs to be dealt with. We have to, I think,
8 refine the way we're essentially contracting the labs,
9 to make sure we get the information we need.

10 So moving on from there, I think that what
11 we can do, to answer your question about your putting the
12 onus back on industry, I think you have a lot of data.
13 We should pull all of that together. We should do the
14 analysis on it, and then in the future you should monitor
15 it.

16 It should essentially be control chart
17 types of things, because you have such a stable process
18 and you know it. If you can control chart that into the
19 future and just check what's going on, and make sure
20 you're always within bounds, then you probably have the
21 information you need to justify staying fairly constant
22 with what you're doing, probably with scaling factors.

23 MR. COX: Okay. So Chip, may I add to that?

24 MR. CAMERON: Yeah, go ahead. Just let me
25 say one thing, Billy, before you do, is that there seems

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1 to be a recognition of what Aby is suggesting could be
2 done. Bill seemed to agree, Paul. I want to hear from
3 Billy and then Sean, okay, on this.

4 I'm not sure how the suggestion about you
5 do this, you do the analysis and then the NRC should
6 monitor it. I don't know how that fits in regulatory
7 space, okay. So we might have to have a discussion on
8 that. But Billy, on this issue of what Aby has urged that
9 the industry do --

10 MR. COX: Right. I guess I'm not sure it's
11 something that needs to be monitored. I think the data,
12 the sample analysis itself, the continuing to analyze for
13 these nuclides, keeps that in check.

14 MR. CAMERON: That's what I mean, Billy.

15 MR. COX: Yeah. But we are looking deeper
16 at the count data, to reinforce the research that we're
17 doing and the position that, the scientific position that
18 EPRI believes is valid.

19 But I will read from NUREG/CR-6567.
20 "Conclusions regarding iodine-129, tech-99 scaling
21 factors. The generic activity scaling factors for
22 iodine-129 and tech-99 developed in this study are
23 believed to be the most accurate database for these
24 scaling factors, and are the ones recommended for use by
25 the nuclear power industry."

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1 The NRC already has the basis for values
2 other than zero. We don't have to do any more work around
3 this. We can take this data and we can look at other
4 country data, and we can look at perhaps other data that
5 EPRI might have that's not included in this.

6 But this is a very detailed study that was
7 contracted by the NRC. So the scaling factors, and
8 they're not out of the realm of reality. That's the
9 basis for values other than zero. They're already
10 there.

11 MR. CAMERON: Let's hear from Sean, and
12 then I'm going to ask Don about what his reaction is to
13 what Billy just said. Go ahead, Sean.

14 MR. McCANDLESS: Well, I picked up my
15 little pen at the point where I thought I heard a
16 suggestion that it be incumbent on industry to suggest
17 case by case variants from the NUREG, and we need to be
18 careful going down that road.

19 While we're in the context of guidance and
20 it's an option, we need to be careful going down that road
21 too far, because you end up with different rules for
22 different players, depending on the state they're in, the
23 home regulator and so forth.

24 And so that's where there's great value, I
25 think, in NRC's intended path, of adjusting the guidance.

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1 MR. CAMERON: Okay, thank you. Thank you,
2 Sean. Let me put Bill on, and then let's go to you, and
3 you already -- you have everything, okay. So let's go
4 to Bill and then we'll go to Don.

5 MR. DORNSIFE: Well, I just wanted to
6 mention that there is a very effective and time-proven
7 way to get people to do things, and that is to put a
8 surcharge by the disposal operator on some of these
9 radionuclides.

10 If you've got to spend more money if you send
11 us more, you're going to spend more money to find out
12 what's really there.

13 MR. CAMERON: Okay, thanks for that
14 suggestion, and we'll ask if any of the generators, when
15 we get there, what they think about the surcharge idea,
16 because that's certainly in the hands of the industry.
17 Okay. I don't know if I've mentioned that Bill's dog is
18 a Rottweiler, but maybe I should do that now.

19 (Laughter.)

20 MR. CAMERON: Okay, Don.

21 MR. LOWMAN: Well, this is from the NUREG
22 that Bill is talking about. It's basically, you know,
23 what Billy's been saying what Aby said. When I was
24 looking back through the old, the rulemaking documents,
25 someone had made the recommendation of establishing a

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1 reporting criteria for those, a threshold criteria for
2 reporting of those nuclides, and I mean is that a valid
3 comment or is that something that could be done?

4 MR. CAMERON: Billy?

5 MR. COX: Reporting criteria? What do you
6 mean by that?

7 MR. LOWMAN: Threshold. Like kind of like
8 what Lisa said, less than one percent of Class A.

9 MR. COX: Right, right. I mean that's an
10 argument that has been made, and our research shows that
11 all the tech-99 in the disposal site over the four years
12 was less than Class A, and therefore it's probably
13 something that doesn't need to be reported anyway.

14 I think that it's not a bad practice to
15 continue to look for them, and to continue, and to report
16 a value other than zero that's, you know, somewhat based
17 on scientific reality. It depends on the site, whether
18 that matters or not.

19 If it's a wet site, it matters a lot more
20 than if it's a dry site. So it can have, I mean, you
21 know, we have -- you'd have to do independent models of
22 the different sites, and look at specifically, you know,
23 what fraction of the waste class tech-99 drives the
24 offsite dose or something like that.

25 But it's a difficult question to answer in

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1 that context. It may be a valid evaluation, a threshold.
2 But you know, below this, you just don't report it.
3 Somebody thought it was important to look for them and
4 report them, and I think that may depend on the site,
5 whether you do that or not.

6 MR. CAMERON: Okay, and Don, I think you
7 wanted to say something.

8 MR. LOWMAN: Yeah. No, just to go back to
9 the PA, you know. It's ultimately the PA that needs this
10 information.

11 MR. CAMERON: Just make sure you --

12 MR. LOWMAN: Yeah. It's ultimately the PA
13 that needs this information. I'm not a PA person, so but
14 using the analogy of the power station analogy, you know,
15 for radiation monitoring, yeah, the self-reading
16 dosimeter and the TLD, the self-reading indicator, where
17 the TLDs are official, and maybe we look at manifest data
18 as being an indicator of something. But that's certain
19 points on PAs.

20 MR. CAMERON: Okay. I think I really
21 should read this highlighted portion into the record for
22 the transcript, also for the people on the phones who
23 can't see this. This is from, this is what we're
24 discussing right now from NUREG/CR-6567.

25 It's on page 53, and the highlighted

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1 sentences are "The obvious need of the nuclear power
2 industry is to determine the actual concentration of
3 I-129 and technetium-99 in low level waste by an
4 analytical method such as mass spectrometry, which
5 possesses adequate sensitivity to measure the actual
6 concentration of these nuclides.

7 "Using a more accurate database in
8 performance assessment modeling would eliminate these
9 two radionuclides as major contributors to the offsite
10 dose from a low level waste disposal facility." Okay.
11 Do we need to add anything more on that, Billy?

12 MR. COX: Well, I just want to say for the
13 record that's an introduction to the section that goes
14 through all the analyses that the National Lab did, to
15 the conclusion, which I partially take out of context,
16 but to the conclusion that I read earlier.

17 There's a strong basis for the numbers in
18 this NUREG, and you know, we might want to take another
19 look at them. But I think that the basis for other than
20 zero already exists.

21 MR. CAMERON: Okay, and we're talking about
22 NUREG/CR-6567?

23 MR. COX: That's correct.

24 MR. CAMERON: Okay, good. Any other
25 suggestions on what might be changed in the NUREG? We

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1 have one major suggestion. Do we have anybody on the
2 panel who has another suggestion for change?

3 MR. COX: I would speak to the attribution
4 question. This came up --

5 MR. CAMERON: Okay. We're going to
6 attribution. Is that --

7 MR. COX: Is that okay?

8 MR. CAMERON: I mean hold on a minute,
9 Billy. Pardon me?

10 MR. MILLER: Billy, I think we need to
11 finish this due to time, because attribution's going to
12 be a huge thing, and it was on this session before, and
13 I would like the discussion to be put into the record.

14 MR. CAMERON: We will do that, Clint.

15 MR. MILLER: But I think it would be good
16 to wrap up this topic.

17 MR. CAMERON: Get closer to the microphone.

18 MR. MILLER: Sorry. I think it would be
19 good to, on these other options, to go around to the
20 scaling factors that we derived, also the computational
21 model that I think is also approved in the topical report.

22 MR. CAMERON: Okay, all right. We know we
23 need to talk about attribution at some point, okay. We
24 will talk about attribution, okay. But let me just go
25 back to some of these topics. I think we've done how to

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1 change the NUREG, I think consequences of zero.
2 Demonstrate that the numbers are at zero. That's
3 something that we discussed. That's what Billy
4 suggested.

5 A whole bunch of things on LLDs that Lisa
6 gave us, which I think we've been discussing. Bill,
7 chlorine-36. What else do you -- do you want to say
8 something more about that, and see what the other
9 panelists have to say?

10 MR. DORNSIFE: No. I mean again, I think
11 if you know somebody, the NRC or somebody could do a
12 scoping analysis that shows, you know, based on chemistry
13 control, it's not an issue for utilities.

14 That should be good enough to put that issue
15 to bed, and obviously the only way you're ever going to
16 get compliance is probably to make it a class-controlling
17 radionuclide, or provide something, you know, other than
18 guidance that makes you look for it, because right now,
19 nobody's looking for it.

20 But I think it needs to be put to bed, in
21 terms of, you know, some methodology to show it's not
22 important.

23 MR. CAMERON: Okay. NRC -- Chris, go
24 ahead.

25 MR. MCKENNEY: I just want to put forward

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1 as a way to have a little bit on both attribution and
2 chlorine-36, as a possible way to change the guidance to
3 address, as a type of topical area, is that if we had a
4 guidance section that was more of and I follow-up.

5 I have chlorine-36 as an example of where
6 a site-specific performance assessment may derive
7 something as important, much like we had the Phantom 4.
8 If the guidance went into that this is what you do for
9 the things that we normally require, but also have a
10 section on the form that is if the waste site requires
11 additional information to go with the waste form, which
12 is like for a specific radionuclide from their PA, that
13 you need to --

14 And they provide guidance of how, what their
15 lower level detection is for that, or attribution (sic),
16 because attribution is not a health and safety issue for
17 the NRC. If we had an area on the form for answering
18 those type of questions, rather than providing guidance
19 that could be unending for site-specific PAs or
20 attribution, which is a decision between the states and
21 the compacts.

22 That's just an example of a change in the
23 NUREG that might be able to cover those areas.

24 MR. CAMERON: Does everybody understand
25 what Chris is suggesting? No, okay.

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1 MR. McKENNEY: Which I'm saying is we don't
2 go through and say here's, on page three, you put down
3 attribution by the following order, blah blah blah, and
4 we give rules on how you do attribution. We just say
5 there are spots at the end of the document where you can
6 put in additional information, based on where you might
7 be shipping to, and that could be either the requirements
8 to fulfill the attribution from the site, or because a
9 site is asking for additional information on certain
10 radionuclides.

11 If they say I know chlorine-36 isn't said
12 to be on every manifest, but for us, we want to see it
13 on every manifest.

14 MR. CAMERON: Okay. I guess everybody --

15 MR. DORNSIFE: Bill Dornsife. The
16 question I have is where is that appropriate to put? I
17 mean if we're talking about site-specific PAs,
18 identifying issues where more information, is that more
19 appropriate for Part 61 guidance, or it's certainly --
20 I don't think it's appropriate for this guidance, but
21 it's just primarily generated for, you know, use for
22 generators.

23 MR. McKENNEY: Right. But if you got to
24 that specific of a thing where you haven't been able to
25 like Paul Black, went out to generators to get enough

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1 statistical information that way, and you need to
2 actually track this inventory over the years on actual
3 things, you may need to go to that step to ask for
4 information on every generator, on generators of certain
5 classes to your site.

6 So I'm saying having a flexible part to do
7 that. I'm not saying that that's the first step. I'm
8 saying that that's a possible situation, depending on how
9 your waste inventory limits are. But to provide
10 flexibility, so that those issues could be addressed that
11 way.

12 MR. CAMERON: Okay, all right. Thanks,
13 and --

14 MR. MCKENNEY: I've said enough.

15 MR. CAMERON: You've got Larry Camper's
16 attention. That's not bad.

17 MR. MCKENNEY: I'm just putting it out for
18 your discussion. I'm not trying to debate it at this
19 point.

20 MR. CAMERON: Okay, okay, fine. Thank
21 you. Thank you very much. Larry.

22 MR. CAMPER: On this topic of attribution,
23 I'm a little concerned about that as an agenda item. In
24 fact, I went back and I think, I mean I think we all
25 understand that attribution is something that comes up

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1 from time to time, that it does have significant
2 implications for the states and the compacts and so
3 forth.

4 But I'm a little bit concerned about it as
5 a topic here, because I went back and looked at the FRN.
6 Okay. Can you hear? Okay, thanks. I'm a little bit
7 concerned about the topic of attribution being an agenda
8 item within this discussion.

9 While I certainly readily understand why it
10 would come up, it has much more wider implications than
11 only, you know, completing the shipping manifest, in
12 terms of what it means to the states and in particular
13 compacts.

14 But you know, I looked at our FRN, and we
15 cite the fact that we've discuss this NUREG-0204, and
16 then we say "Specifically NRC is interested in gaining
17 a better understanding of the issues associated with
18 reporting certain difficult to measure radionuclides,"
19 and we go on to cite the radionuclide and so forth and
20 so on.

21 My only point is if we were going to have
22 a discussion of attribution, I think an FRN should
23 probably have noticed that fact, because there may have
24 been other players, in particular the compacts of the
25 states, that would have wanted to have been aware of that.

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1 So I caution in that regard.

2 MR. CAMERON: Okay thanks Larry, and I
3 just, I want to take an opportunity here to just say that
4 we did, the NRC did receive something from Clint Miller,
5 PG&E, that we'll see if we can attach to the transcript
6 perhaps. I'll talk about that. But go ahead.

7 MR. CAMPER: And let me say this, Clint. I
8 mean once we put this out there for public consideration,
9 and if during a meeting this topic of attribution you want
10 to talk about more, that's fine. I just think we need
11 to notice it accordingly, so people will be aware.
12 That's all.

13 MR. CAMERON: Okay. I guess we did get to
14 attribution, and I don't want to forget Tom Kalinowski,
15 to talk a little bit about one of the particular
16 radionuclides. So let me do that. I'm not opening this
17 up to those whole room yet, although we've been dabbling
18 with that.

19 But let me get Tom to just talk about that.
20 You know what you need to talk about, right?

21 (Laughter.)

22 MR. KALINOWSKI: My name is Tom Kalinowski.
23 I'm with D.W. James Consulting. We've been working with
24 EPRI on some of the research that's been done on these
25 topics, as far as characterization and scaling factors

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1 over the last several years, and both David James and I
2 have been working in the nuclear power industry for 30
3 years or so, in the area of waste characterization and
4 analysis of data.

5 I guess, you know, one question as far as,
6 you know, what you'd like me to specifically address, I
7 don't know. There's been, there's actually been a
8 number of issues that have been brought up that probably
9 need some technical clarification, because in fact
10 scaling factors --

11 MR. DORNIFE: Well, I had asked how good
12 is the carbon-14 data in irradiated hardware.

13 MR. KALINOWSKI: Right.

14 MR. DORNIFE: That's the question.

15 MR. KALINOWSKI: And if that's the only one
16 you want me to address, then that's fine. The answer is
17 it depends. If you're looking at activated hardware,
18 you know, most of the carbon-14 that's put in the waste
19 from it is through an activation analysis. All
20 activation analyses are dependent on the material test
21 reports that identify how much of the different elements
22 are in there that we then activate.

23 We really have good data on materials that
24 are specifically required for the alloy. So in the case
25 of many stainless steels, we know how much iron is in

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1 there, we know how much nickel. If they're high carbon
2 and carbon is added, then we, you know, we have good
3 numbers on those items.

4 A lot of stainless steels are fairly low
5 carbon, and a lot of times that's entered as a trace
6 element, which may be a less than value in and of itself.
7 In general though, I'd say for the activated metals, the
8 carbon-14 that's being reported is a reasonably accurate
9 number.

10 MR. CAMERON: Thanks. Thank you very
11 much, Tom, and I want to get some more expertise, expert
12 data from the NRC staff who are in the audience right now.
13 But let me quickly go to Bobby.

14 MR. ABU-EID: This is Bobby Eid. I would
15 like just to make comments about the LLDs in the paragraph
16 in the NUREG.

17 The NUREG may cause some confusion, because
18 in the case that you need to use other techniques in order
19 to assess the presence of radionuclides such as carbon-14
20 and others, and mentioning exactly by name GC mass
21 spectrometry, for example, this is where you are looking
22 at 10 to the minus 12 of the atom.

23 So it is more GC mass spectrometry, for
24 example, is used as a research tool, in order to find
25 whether there is one atom or not. So this could be a

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1 misgiving and it will cause lots of confusion.
2 Therefore, we need to be more practical in my view, to
3 look at what are the common practices and the common
4 methods that they are used by the nuclear industry, and
5 look at the LLDs.

6 Otherwise, if we go back and use what is
7 proposed here, I think it would be more confusion, and
8 would add more -- then does not add much to the
9 understanding. So therefore, the zero number could be
10 explained by others, where you need to go and use other
11 techniques, which are GC mass spectrometry.

12 You indicated they're zero, and then from
13 zero then you go up, and this could be misleading. As
14 an example, I will give you what is in McCurdy paper and
15 here is where the MDA, the MDA for carbon-14 is 2.96, I'm
16 sorry, 1.48 times 10 to the power of 7 per kilogram.

17 So if we apply what Lisa is proposing, her
18 proposal, which is one percent, will be 10 to the minus
19 2 actually of that detection limit that is mentioned
20 here.

21 So my point is to be practical, to look at
22 what the industry actually they use for common analysis
23 in their labs. We trust their analysis, and then try to
24 relate it to the MDL, and then later after to the scaling
25 factor.

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1 MR. CAMERON: Okay. Thanks Boby on
2 practically. I'm going to go back to our list here, but
3 Bill, did you -- okay, good. You're good. I think we've
4 been going through a lot of these agenda items. Let me
5 just go to some of this. Do we need to say anything more
6 about processors and shippers than we've noted already?

7 (No response.)

8 MR. CAMERON: Okay. I'm going to get ready
9 to -- then I'll go to you, Bill. I'm going to get ready
10 to go out to the audience and the phones, and we're going
11 to come back to the panel during that, if there's anything
12 that you want to say. But I also want to give you an
13 opportunity to just make a last statement based on what
14 you've heard today also.

15 Don, are we getting the type of material
16 that you want? Okay. Don is -- for the transcript, he's
17 nodding affirmatively. Okay, Bill.

18 MR. DORNSIFE: Yeah. I have a quick
19 question for the NRC on processors, and essentially
20 disposal facilities. I understand that manifest is
21 required for -- a manifest is required for waste going
22 up for disposal.

23 What if a facility has both one license for
24 both disposal and processing? Does -- is the manifest
25 coming in for that facility sufficient, even though it

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1 may not be classified for disposal purposes? How would
2 the regulations address that?

3 MR. CAMERON: This is a question for the NRC
4 that I think I'm going to --

5 MR. DORNSIFE: Yeah. I don't need an
6 answer right now, but --

7 MR. CAMERON: Right. So okay. So we'll
8 hold off on that.

9 MR. MCKENNEY: That's technically my
10 answer right now, is that we'd have to go back and think
11 about that.

12 MR. CAMERON: Okay, okay.

13 MR. MCKENNEY: I don't want to do any off
14 the cuff on that statement.

15 MR. CAMERON: Right, okay, thank you.
16 Well let's go to this gentleman right here. Stephen, did
17 you have something you want to -- okay. Yes sir, please
18 introduce yourself.

19 MR. WHITE: Sir, my name is Aaron White.
20 I'm with the Department of Energy at Oak Ridge, and I have
21 a really fairly simple question.

22 If the crux of this information is how it's
23 going to be used to affect the performance analysis or
24 performance assessments, then why is it not possible just
25 to add some more information into the waste acceptance

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1 criteria for the specific disposal facilities, and that
2 way you can drive the information that's presented to you
3 from the specific generators?

4 MR. CAMERON: Bill?

5 MR. DORNSIFE: Yeah, I mean that's
6 certainly part of the solution, but I think -- and I'm
7 glad you brought it up, because obviously the facilities
8 like ours that can take DOE waste, there's a real concern,
9 the same concerns apply as what we were talking about,
10 particularly related to tech-99.

11 You know, you all have problems with tech-99
12 in the complex, and for example, I mean if tech-99 is
13 so mobile, why is it still there on the components? I
14 mean are you characterizing the waste good enough that
15 it's really there or not, okay? I mean that's the kind
16 of issues that I think you all need to look at.

17 MR. CAMERON: Okay.

18 MR. DORNSIFE: And that's very difficult to
19 address in a whack.

20 MR. CAMERON: All right. Thank you for
21 that, and Don, Don Lowman, NRC.

22 MR. LOWMAN: Just before we go to the
23 phones, you know, one thing we need to do before we leave
24 this meeting and we probably need to do it before the
25 phones, we would like some concrete revisions that you

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1 would like to the NUREG, and we could get started on it
2 while the industry goes off and does their part.

3 So is there any concrete, wording changes
4 that you want or feel need to be done to the NUREG?

5 MR. CAMERON: You know, I think we've
6 really gotten some good comments on how to change the
7 NUREG, and it seems like what you're asking for now is
8 particular wording. That's fine, but this may not be the
9 best forum to try to get particular wording in, although
10 I know that you need that.

11 I think that this is the big ticket up here
12 that everybody seems to agree to. How you word that is
13 going to be another story, and obviously if you're going
14 out for comment, you're going to be able to get some
15 specifics.

16 But since the question's been posed, I don't
17 want people not to have an opportunity to give some
18 specific language on this, and I'll start with the
19 panels. Anybody have anything specific they want to
20 add?

21 MR. COX: This is Billy Cox with EPRI.
22 Don, we would want to put that in writing, in the form
23 of a letter to NRC. Is there a docket number that we
24 should reference in that letter, or is there no docket
25 open on this?

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1 MR. LOWMAN: There's a project number, 800
2 I think.

3 MR. COX: A project number, okay. Yeah, we
4 would want to kick it around internally, and you know,
5 make sure that we've got it fully vetted, so that we get
6 the right wording.

7 MR. CAMERON: I think that's probably the
8 most appropriate response here, although I don't want to
9 prevent anybody from saying something specific. Paul?

10 MR. BLACK: Summing up for me, I think that
11 the issue at the end of the day is what Lloyd Currie did,
12 I think, is being misinterpreted or misapplied, and
13 that's what we need to address. Ultimately, LLDs, he was
14 tasked with coming up with the formula for LLDs. So he
15 came up with a formula that he said, as I said earlier,
16 he basically says in his paper this should not be applied,
17 if what you're going to do is averaging, which is the same
18 as summing.

19 That's currently what we're doing. We're
20 applying LLDs to averaging, and that doesn't make any
21 sense. Lloyd Currie knew that. If he'd been tasked
22 instead with what should we be doing with data that we're
23 collecting to help with the performance assessment, he'd
24 have said use the actual count data. Tell us whether
25 it's positive or negative. But use the actual results

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1 and don't censor the information. I think that's where
2 we need to go.

3 MR. CAMERON: Okay. Beautiful summary.
4 Let's go in the audience now. Lisa.

5 MS. EDWARDS: This is just a general
6 comment. Is that okay? For me, in today's conversation
7 we've focused on two different but related challenges,
8 the first being accurate manifesting and the second being
9 accurate performance assessments.

10 The conversation for me has tried to merge
11 those two topics, but I think they're actually two
12 separate but related topics. Accurate manifesting of
13 radionuclide inventory that is contained in waste
14 packages that are generated and offered for disposal is
15 what EPRI prepared to discuss today.

16 The NUREG that is out there is proving to
17 be an obstacle to accurate reporting of those
18 radionuclides in the inventory and those containers. I
19 think that's been pretty well agreed upon in the meeting,
20 but it felt like it got a little bit, I don't know, some
21 of your comments Aby made me wonder if it got a little
22 obscured.

23 So I would go back on the record to state
24 that the NUREGs, because plants are risk-avoidant, they
25 avoid risk and risk avoidance in general is their modus

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1 operandi, the NUREG is more or less treated as if it's
2 a regulation. What is in the NUREG right now is driving
3 behaviors that over-report, in some cases grossly
4 over-report radionuclides that are important in
5 performance assessment.

6 The reason performance assessment bears on
7 this discussion is because it provides some context, so
8 that we understand what the consequences of this
9 over-reporting is, and why it's important enough to take
10 an action to address it.

11 So that's what we've prepared, is a
12 discussion of what we think needs to change in the NUREG
13 itself, to drive more accurate reporting or allow for
14 more accurate reporting of the actual radionuclide
15 inventory in the waste packages.

16 We will, Don, provide you written comment,
17 so that you get more concrete information. That was
18 mostly centered around alternatives to the use of LLDs
19 as an actual value, right.

20 The second challenge of accurate
21 performance assessment is a completely separate
22 conversation. It has a different set of information
23 that's needed to address it. It's about what kind of
24 form radionuclides are in, what kind of fate and
25 transport.

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1 Does it go gaseous, and how does it behave
2 in a disposal site environment, and that's nuclide by
3 nuclide-specific. But answering those questions starts
4 with an accurate inventory, and that's why the two
5 discussions are related. But I think today we were
6 supposed to solve the NUREG problem, and not the
7 performance assessment problem.

8 I think Clint kind of summarized a number
9 of the potential avenues to address the NUREG, and open
10 up that flexibility that Joe mentioned, and I don't think
11 I need to restate those. The one thing that came up to
12 me that was new, that I hadn't considered before I got
13 here today was brought up. Is it Clay or Perry?

14 Perry brought up with the processor, and
15 that is how a processor treats waste that some of it's
16 partially released, but there was an overall inventory
17 determined by an LLD. I haven't given that enough
18 thought to have an opinion on it, but I haven't heard any
19 response by any other member in the audience or on the
20 panel, to what he brought up.

21 MR. CAMERON: Thank you. Do we have -- I'm
22 not sure everybody's going to remember exactly what Perry
23 said, and no one did respond to it. But does anybody have
24 anything to say relative to what Perry said before? Can
25 you restate it? Go ahead.

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1 MR. WILLIAMS: Yes, and again my name is
2 Perry Williams, and I'm representing Studsvik, a
3 processor in Tennessee, and what we do is we will see
4 waste from a generator, and I brought up the scenario
5 where we conditionally release part of that waste. But
6 when we manifest it for disposal, all the activity is
7 assumed to be with what goes for disposal.

8 So let's say we received 1,000 pounds,
9 conditionally release 900. Well, the activity stays for
10 that 100 pounds, and in the case of LLDs, where you're
11 dealing with concentrations, that increases the
12 concentration of the LLD that you have.

13 Therefore, if it's above, then if it's above
14 the one percent of the Table 1 value, then we treat it
15 as a true activity. So therefore being conservative, we
16 sometimes create activity coming out the door, because
17 we've increased concentrations of LLDs, if that makes
18 sense.

19 MR. CAMERON: Thanks, Perry. Anybody want
20 to say anything in response to that? Billy.

21 MR. COX: I think what we're talking about,
22 using an accurate number instead of an inaccurate LLD
23 number or zero, is exactly what needs to be done to
24 resolve that problem. The only caveat for that would be
25 that there's a processor, depending on the process, that

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1 occurs.

2 You know, that's something that the
3 processor needs to evaluate as far as, you know, is
4 tritium really staying with the waste and is carbon-14
5 really staying with the waste, or is it going off in some
6 other process? It tends to be more driven by chemical
7 or thermal changes, but you know, that needs to be part
8 of their license.

9 But if we change the manifesting to be more
10 accurate, then we won't be compounding errors like we are
11 now.

12 MR. CAMERON: Okay. That's a good, very
13 good point, Billy. Tracy, do we have anybody on the
14 phone who wants to talk to us?

15 OPERATOR: As a reminder, please press 5
16 and 1 at this time if you did have a question or comment.
17 There's nobody queued at this time.

18 (No response.)

19 MR. CAMERON: So we don't have anybody,
20 Tracy?

21 OPERATOR: No, no one has queued up.

22 MR. CAMERON: Okay. Thank you very much.
23 Let's keep going to the audience, and then we're going
24 to come back to the table and hear any last comments.

25 (Simultaneous speaking.)

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1 MR. CAMERON: You want to talk to Perry's
2 comments? Go ahead.

3 MR. DORNSEIFE: I mean I don't think what
4 he's doing is any different than what a lot of other
5 generators do, particularly the medical folks. They
6 report what they initially have in terms of activity,
7 whether it goes into the patient or you name it.

8 It's all assumed to go to disposal. I mean
9 just like a sealed source. There's no decay taken for
10 a sealed source typically. So it's -- I don't think
11 that's unique what you're doing.

12 MR. CAMERON: Okay, thank you. Clint, and
13 then we'll go to Aby. Clint? Clint Miller.

14 MR. MILLER: Yes. Clint Miller, Pacific
15 Gas and Electric. This should have been an agenda item
16 I guess, but I had an item on the certification statement
17 on the 540 form.

18 The certification statement is basically
19 has two sentences. The first sentence is that you comply
20 with transportation requirements. The second sentence
21 that you comply with barrel requirements.

22 In Part 20, if we're shipping to a waste
23 processor, we have to fill out this form, and when you
24 fill out that form, we don't comply with disposal. You
25 haven't classified it and it's not properly packaged for

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1 disposal.

2 Yet we're supposed to sign this
3 certification statement. So that gives me some
4 consternation that we're signing to this second
5 statement.

6 So I believe it would be very helpful if we
7 could have the option to either strike the second
8 sentence, just line it out in the guidance and you can
9 sign it when going to processor, or reformat the
10 certification statement for a little box to check,
11 Sentence 1, Sentence 2.

12 If I'm going to disposal, I check both
13 sentences. If I'm going to a processor, I only check the
14 transportation. Then I have to sign without the fear of
15 committing a false material statement.

16 MR. CAMERON: Good. Thanks, Clint.
17 We've got to go to Aby, Aby Mohseni.

18 MR. MOHSENI: I want to address an issue
19 about again, trying to focus what the role of NRC is. Not
20 to, you know, I know we do have a role, but I don't want
21 to confuse this with facilitating of the resolution of
22 something, versus actually being there as an oversight
23 agency that ensures public health and safety.

24 At this stage, the way the problem has been
25 presented, there is no health issue that this one is

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1 addressing, except for those who actually automatically
2 use perhaps zeros as an LLD number in their PAs.
3 Therefore, asking NRC to address the issue, it's
4 broadening NRC's role, which we've done in the past.

5 We have been a facilitator of solving,
6 helping solve the issues that actually our licensees have
7 or state agreement licensees have. But it shouldn't be
8 confused with our role with actually considering the
9 limits of a guidance. A guidance here, if it doesn't say
10 what the flexibility that you all are asking for, doesn't
11 preclude you from actually coming up with the right data,
12 not LLDs, and actually testing the system.

13 If it doesn't work, blame us for having been
14 a real obstruction. But I know in practice, there's a
15 history there. But you cannot reinforce that erroneous
16 history by continuing to expect NRC's role to be broader
17 than what it needs to be as part of our mission.

18 Facilitation is one thing. But ensuring
19 that you guys solve the issue that you guys have, the way
20 you're describing it, we just don't want to be an
21 obstacle, and I agree with that. To that extent, a NUREG
22 can be interpreted by some people erroneously as being
23 a requirement.

24 It isn't, and I think we need to understand
25 that, although we're taking this, all the feedback we're

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1 getting to revise the NUREG efficiently, effectively as
2 soon as possible, so there's no potential
3 misunderstanding of NRC's facilitation role in resolving
4 this issue.

5 But be careful what you ask of NRC to do.
6 By that same token that you ask NRC to have a broader role
7 that it needs to have, it is also creating unintended
8 consequences for all of us, Agreement States and
9 otherwise. This is a solution that can be resolved.
10 You've got most of the parties. My boss is all behind
11 me, if I spoke out of turn.

12 But you don't want to reinforce the
13 erroneous assumption that NRC is broader than what its
14 mission really is. Thank you.

15 MR. CAMERON: Okay, and what I want to do
16 is probably an appropriate statement, to go back to the
17 panel for any reaction and any last statements that you
18 want to make. I want to see what Boby has to say, and
19 see if Lisa still has something to say before we go to
20 the panel. But basically, we're wrapping up now. Boby,
21 and then we'll go to Rusty.

22 MR. ABU-EID: Just going to make the
23 comment that using the term "zero" is incorrect, because
24 there is no zero actually, and maybe Paul would agree with
25 me, statistically speaking, to say zero. If you use the

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1 word "zero," there could be some liability and there
2 could be some question about the designation of zero.

3 Therefore, I would recommend using other
4 terminology, not to call it zero, to call it below control
5 limits or whatever it is. These control limits, they
6 could vary depending. So I would try to avoid the word
7 "zero," because it's misleading.

8 MR. CAMERON: Okay, thanks. Just don't
9 call it below regulatory concern.

10 (Laughter.)

11 MR. CAMERON: Rusty.

12 MR. LUNDBERG: I'm not going to address
13 that, but Rusty Lundberg with the state of Utah. Just
14 to dovetail off of what Aby just said, I want to make clear
15 though as an Agreement State view of that. In the
16 absence of a rule that is clear and directional as far
17 as what should be done in a given matter, you turn to
18 guidance and it becomes de facto application of a rule
19 in a way.

20 So although I understand what Aby just said,
21 I think we have to put it in the right context, that
22 guidance is a driver, because there's nothing in the rule
23 that is also saying this as well.

24 So I agree that facilitating the discussion
25 to get us through all of this is very beneficial, but I

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1 think we have to keep it in mind that in the absence of
2 a rule change itself or inclusion of additional
3 information in a rule, you turn to guidance.

4 That's what we would do in order to justify
5 our actions, so that we're not arbitrary and capricious
6 in what we do.

7 MR. CAMERON: That's a good point, Rusty.
8 Thank you. Andy Campbell and then we're going to see if
9 Lisa still has anything to say, and then we're going
10 back up to --

11 MR. CAMPBELL: Okay. I'm Andy Campbell,
12 currently at the NRC. I'm the Deputy Director of
13 Enforcement. But for 16 years in my career I worked with
14 Chris, Jim and a variety of other people, Bill Dornsife
15 with the state of Pennsylvania at that time, on
16 performance assessment and dealing with this issue in
17 particular.

18 One of the things, you know, I wanted to
19 compliment everybody on is trying to get to the bottom
20 of this, and coming up with a reasonable resolution of
21 an issue that's been perking for 20 or 30 years. I think
22 the, a lot of things that have developed in the
23 technology, the ability to measure things, the ability
24 of the reactors to predict what's in their waste streams
25 is very good.

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1 Most of the discussion today is about the
2 reactor community and the impact that has on waste
3 disposal. But if you look at the chlorine-36, and when
4 we were doing test analyses to develop guidance for
5 performance assessment, chlorine-36 was in our database,
6 and it was the late 80's. It was coming out of the
7 biomedical research community, and some of the carbon-14
8 also comes out of there.

9 So I think one thing that needs to be done
10 is reach out that community, to make sure that they have
11 some input on this, because we pull manifests and look
12 for where was all the chlorine-36 coming from, and it was
13 a single manifest from a particular producer in a
14 particular state.

15 Maybe it didn't blow through the data at the
16 time, but at the time, it became a major impact on the
17 performance assessment work that we were doing. So that
18 would be my comment. But I want to compliment everyone
19 here for trying to get to the bottom of this finally.

20 MR. CAMERON: Thank you very much, and
21 Lisa, do you need to say anything? Okay. Well let's go
22 to the panel. Aby's comment, we've heard something from
23 Rusty on that, putting that into a perspective. But
24 let's go to all of you for anything that you might want
25 to say about what Aby said. You don't have to address

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1 that, but in any other final comments that you want to
2 give.

3 So let's go to Joe, and then we'll go Billy,
4 Sean, Bill Dornsife, Paul Black, and then anything Don
5 needs to ask us for, and then we'll ask Aby to close the
6 meeting out for us, if he hasn't already done that.

7 (Laughter.)

8 MR. CAMERON: But at any rate, go ahead,
9 Joe.

10 MR. WEISMAN: I would like to just add one
11 small thing, based on what Aby said. I really don't
12 disagree that the role of the NRC should be as not telling
13 the industry what to do, but providing the framework in
14 which we should operate.

15 I do think, though, there is a question of
16 leadership, that in having the NRC provide better
17 guidance to the generators than, because the whole reason
18 we're doing this is because it's dictated in 10 CFR Part
19 20 Appendix G, that we have to account for these four
20 nuclides.

21 So the guidance gives generators, because
22 there's no guidance in Appendix G on how to do it. It
23 said "make sure you report these nuclides." This NUREG
24 does give the generators some guidance on how to do it.
25 So along with what Rusty said, it does get interpreted

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1 as de facto regulation, and when you use words in guidance
2 that says "shall" and "must," it reinforces that
3 paradigm, that it is a de facto requirement.

4 So we would just ask the NRC to consider
5 the weight of the type of, although it is guidance and
6 it's not supposed to be taken as regulation, it's
7 interpreted that way, and we as a conservative industry
8 will continue to function in that manner.

9 We would just ask the NRC to maybe just
10 consider that side of the argument, and allow the -- take
11 the charge of clarifying your documents with when
12 licensees could be using these as de facto regulations.

13 MR. CAMERON: Thank you, Joe, and Billy.

14 MR. COX: EPRI would like to thank the NRC
15 for facilitating this meeting. I think it's brought a
16 lot of important issues to the forefront. As far as
17 Aby's comment goes, I guess I would just say that I think
18 there is an unintended consequence here now, and that's
19 that I think both the NRC and EPRI have gone on record
20 that disposal, safe disposal is preferred over storage.

21 That's not to say that storage isn't safe,
22 but disposal is preferred over storage. What the
23 guidance has us do right now, regardless of whether it's
24 guidance or not, the reality of guidance is that from
25 a licensee's perspective generally, if you're not doing

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1 what the guidance says, you have to have some
2 justification for why.

3 That's not easy. So, and it depends a lot
4 on individuals that are doing inspections. So the
5 guidance has us unintentionally introducing positive
6 bias into the site, disposal site inventory. That's an
7 unintended consequence that adversely impacts the
8 ability to dispose of radioactive waste. So I think that
9 it's something that does need to be addressed.

10 MR. CAMERON: Okay, and I think that the NRC
11 is always pretty clear that if you're not going to follow
12 the guidance, that you have to have some justification
13 for doing it another way. Sean.

14 MR. McCANDLESS: You know, in terms of
15 closing remarks, I really can't say it better than Joe
16 and Billy already have, in terms of guidance versus
17 regulation and making clear the intent that guidance
18 should be guidance.

19 MR. CAMERON: Okay. Thanks Sean, and
20 Bill, Bill Dornsife.

21 MR. DORNSIFE: Chip, believe it or not, I
22 have nothing to add. I said it all.

23 (Laughter.)

24 MR. CAMERON: Wow, all right. That's a
25 hard act to follow. Paul.

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1 MR. BLACK: All right. I'll take Bill's
2 role then. I agree with what Joe said as well. Guidance
3 in general should be process-oriented, and it should not
4 be prescriptive. That way, people don't start treating
5 it as a regulation. Here in particular, the focus was
6 this document. This is manifest guidance rather than PA
7 guidance.

8 So what can we do for manifesting? If we
9 want to use manifesting to help PAs, what the guidance
10 should encourage people to do is put their best values
11 in there, and not censor data, not censor the information
12 by putting LLDs.

13 So if you get your best values in there, then
14 we can actually use manifest information in the PA. Does
15 the guidance need to say how you get a best value? Maybe,
16 maybe to some extent. But that's what we should be
17 encouraging.

18 So best values, our perspective, because we
19 want to be probabilistic PAs, is it would be great if
20 generators would put some uncertainty around that in
21 some form or another as well. I doubt that that will ever
22 happen, but at the very least, we should be asking for
23 what's your best guess of this, and there should be some
24 basis for it as well you would hope.

25 Otherwise, I'll also agree with something

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1 Bill said earlier. One way to potentially implement
2 this is surcharging or put another name on it. That way,
3 the generators have some motivation to actually get the
4 best values on that.

5 MR. CAMERON: Okay, thank you. And Don?

6 MR. LOWMAN: I guess my closing remark is
7 we've had, you know, really good dialogue here, got a lot
8 of good information. So I'll take it back, got a lot of
9 work to do. I may be contacting some people to get more
10 information, and I'm just real happy with the way the
11 meeting went, because I mentioned in my opening remarks
12 that, you know, I've been out of the radioactive waste
13 business for a while.

14 When I got to the NRC, when I went through
15 my interview, I was reviewing Part 61 BTP, all the
16 dockets. Nothing had changed in the years I'd been out
17 of the industry. Since I've been here, we've done the
18 volume reduction policy statement, we're working on Part
19 61, the BTP and this. So it feels good to be part of this
20 revolution.

21 MR. CAMERON: Great, thank you, and thanks
22 for being the laboring oar, so to speak, on this project,
23 and Aby, do you want to come up and talk to us? I think
24 come up here. Does he have a mic or do you --

25

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1 Closing Remarks

2 MR. MOHSENI: Thank you very much. It was
3 a very productive dialogue. It satisfied the purpose of
4 the meeting. I really appreciate the honest and
5 difficult discourse that occurred. The interests of
6 various parties clearly manifested themselves well, and
7 we do recognize that we didn't have a full cross-section
8 of all the stakeholders in this discussion, and we hope
9 to accomplish that in the next few months.

10 Some of the insights from today I tried to
11 take notes, and they're very important pieces of
12 information that I collected. It may not be exhaustive,
13 but here are the key points.

14 Revise the NUREG. Yes. Add flexibility
15 to add reasonableness and perhaps using scaling factors,
16 acknowledging, recognizing various methods that you guys
17 can adhere to the requirements. So it will be flexible.
18 It will recognize a broad range of possible ways of
19 meeting the requirements.

20 NRC/EPRI setting standards was another
21 notion that was discussed. Addressing the erroneous
22 content of the NUREG, the summation and the averaging of
23 the LLDs, and making it more accurate, to the extent
24 possible, looking at Lloyd Currie's original paper and
25 reconciling the misappropriation of language used in

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1 providing the guidance.

2 There was some discussion that there is a
3 possibility of spending more time counting samples, but
4 there's a limit to its practicality was brought up.
5 There was a discussion about considering the correlation
6 with failed fuel, and using that kind of information to
7 scale the numbers, the data.

8 There was a discussion of how much is
9 practical and can be done by the generators to improve
10 the data quality. Using higher Kds. Although that may
11 happen in the performance assessment component, the
12 incoming, which feeds into that, should allow reasonable
13 flexibility so in the performance assessment, I don't
14 think we need to do anything in the front end, as much
15 as needed, as Kds would certainly have their own basis
16 of being assessed against again uncertainties and so
17 forth.

18 We heard a very powerful discussion on the
19 cost of making poor decisions, the sampling strategies
20 used, and the consequences of poor decisions. They're
21 not just related to limiting the regulatory
22 consequences, but also the fact that this country has
23 only a number of facilities, disposal sites, and this has
24 now been recognized that could contribute to a policy
25 issue nationwide, of how much capacity will be left if

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1 we continue to overestimate the inventory with the
2 current practices.

3 We talked about improving Kds. There was
4 some good discussion about optimizing the use of small
5 number of disposal sites as part of that discussion. So
6 that global look at the consequences is warranted, to be
7 able to ensure that our future revision to guidance would
8 not, at least based on what we know today, cause more
9 limitations.

10 Every guidance written reflects the
11 knowledge at the time, the decade we're in. Certainly
12 every guidance requires a review and revisions with time,
13 and this is the time to look at it critically today, and
14 we are requesting specific language for you all to
15 provide, although we still have other stakeholders that
16 we will reach out to for their contribution to the
17 revision.

18 But this particular group came up with a
19 lot of good ideas, and we don't want to lose those. You
20 are so familiar with the guidance that you could probably
21 provide some very good specific language for us to
22 consider when we revise it. If you could provide that
23 to us in writing, as you suggested, within the next week
24 or so, while the issue is still fresh in your mind and
25 you still have your blood pressure up, based on the

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1 discussion, provide us some remedies. We would
2 certainly appreciate it.

3 We talked extensively about accuracy of
4 data versus compliance. The importance of uncertainty
5 analysis in those parameters, although there wasn't much
6 optimism by Paul that we'll ever get there.

7 But nonetheless, the notion is a valid
8 notion that plays an important role in performance
9 assessment in all the other parameters. Why shouldn't
10 it be treated the same, the data that comes on these
11 phantom isotopes?

12 So we heard from Rusty. I appreciated the
13 comments made by a state regulator, and talking about
14 public trust and health and safety. It is imperative
15 that a win-win situation considers all aspects of the
16 interest of various stakeholders.

17 A very important player in this remains the
18 public confidence entrusted in state government and the
19 NRC, and other stakeholders who are actually
20 practitioners in their own states, such as DOE, to be able
21 to actually explain with consistency the decision-making
22 process by which we all are applying.

23 So great points by Rusty, and by the way,
24 NRC shares everything you said, Rusty. Public trust and
25 communicating the basis of decision-making is a critical

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1 piece of NRC's work.

2 We talked about chlorine-36. There was a
3 suggestion that NRC perhaps do an analysis and determine
4 that it is not an issue for power plants. My personal
5 view is I would turn it around and say it is in the best
6 interest of the industry to do that analysis and provide
7 it.

8 You know, it is again something that is not
9 driving our public health and safety issues, as much as
10 it is driving a policy issue relative to capacity. So
11 that's just my personal view.

12 We also heard about the other isotopes,
13 radioisotopes that was spoken less about, but primarily
14 we talking about technetium and iodine-129. But there
15 are the others that are not as challenging, but
16 nonetheless need to be addressed.

17 And ultimately you provided more
18 specificity in what should go into the NUREG revision.
19 I did say flexibility is one. Correcting the
20 inaccuracies relative to the use of LLDs, and potentially
21 if there is something to be said about chlorine-36, I
22 doubt that we will have any analysis by the time frame
23 we're trying to revise the NUREG.

24 But nonetheless, you questioned whether
25 attribution ought to be part of the revision of the NUREG,

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1 and there was not enough consensus in the room relative
2 to bringing that into the picture, and there was also a
3 suggestion to add language to waste acceptance criteria,
4 and potentially on the receiving end that is prior to PA,
5 for each disposal site.

6 Can I have the next slide please? We will
7 take these comments, but they should be complemented with
8 your specific recommendations on change, changes to the
9 NUREG, and keep in mind that NRC is focused on
10 performance-based, risk-informed thinking, and if your
11 recommendations for specific language are offered,
12 please keep that in mind.

13 We will, of course, evaluate everything we
14 heard, not just the highlights that I presented here. We
15 will conduct two webinars in the near future, to gather
16 more comments specifically from states and advocacy
17 groups, and we will, if the decision is made, I would add
18 this "if," because we've got some internal discussion to
19 do, to what extent this is the, if you had one more dollar,
20 under the circumstances you would spend it here.

21 To the extent that that is approved
22 internally to NRC to move forward, we will draft proposed
23 amendments, and then issue it for public comment, and
24 ultimately hope that NRC is no longer an obstacle.

25 The resolution, the solution is still in

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1 your hands. It's not in the hands of the NRC. We just
2 are minimizing us being, having the science of a couple
3 of decades ago, to prevail your thinking and your
4 imagination of the NRC's role.

5 So we want to reduce that as much as
6 possible, so you have your free hand to actually solve
7 scientific questions relative to better measurements and
8 better accuracy with uncertainty analysis of the data
9 that affects not just the transport and the manifest, but
10 ultimately the performance assessment.

11 Next. Thank you very much. I appreciate
12 your time.

13 MR. CAMERON: Thanks. Thanks, Aby.
14 We're going to go to Larry Camper for possibly a shorter
15 statement.

16 MR. CAMPER: Real quick. No, Aby very
17 good. Thank you, Aby. Very good job. Very good
18 summary. Thank you very much, and I did ask Aby to make
19 sure to ask you to give us something promptly, so we could
20 have something to work with.

21 That's the important thing for the staff as
22 a takeaway, something we can digest and work with. But
23 we can give you 30 days. We'll give you 30 days. Mark
24 and I were conferring real time while Aby was talking,
25 so 30 days would be fine, okay. Thank you.

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1 MR. CAMERON: Okay, and just thank you to
2 Ron, our AV person and to Tracy our operator, and to
3 Deborah Gonzalez -- I introduced her as Delores earlier.
4 It's Deborah Gonzalez. Also thank you to Karen Pinkston
5 for operating the web part of it. With that, we're
6 adjourned.

7 (Whereupon, at 12:49 p.m., the meeting was
8 adjourned.)
9
10

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