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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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WORKSHOP ON DEVELOPMENT OF REGULATIONS FOR
SPENT NUCLEAR FUEL REPROCESSING FACILITIES

+ + + + +

Wednesday, October 20, 2010

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Sheraton Albuquerque, Uptown Hotel

2600 Louisiana Blvd., NE

Albuquerque, New Mexico

9:00 a.m.

BEFORE: CHIP CAMERON, Facilitator

NRC STAFF:

MARISSA BAILEY

JOSE CUADRADO

TOM HILTZ

MIRIAM JUCKETT

MARSHALL KOHEN

TOM PHAM

PHIL REED

WENDY REED

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OTHER ATTENDEES :

SVEN BADER

NATE BIXLER

BEATRICE BRAILSFORD

JIM BRESEE

ANNE CLARK

MIKE EHINGER

DON HANCOCK

JOHN HEATON

ROBERT HOGG

MIKE LEE

JIM LIEBERMAN

ROD McCULLUM

TOM PHAM

JAMES ROSS

REX STRONG

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A G E N D A

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<u>ITEM</u>	<u>PAGE</u>
Opening Remarks and Recap of Day 1	4
Facilitated Discussion #4:	41
Security and Safeguards Issues Related to Reprocessing Facilities	
Opportunity for Questions	52
Facilitated Discussion #5:	94
Potential Waste Management Issues Related to Reprocessing Facilities	
Opportunity for Questions	106
Facilitated Discussion #6:	181
Environmental Protection for Reprocessing Opportunity for Questions	191
Summary, Evaluations, and Suggestions	233
Adjourn	

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P R O C E E D I N G S

1
2 MR. CAMERON: Welcome back to the second
3 day of our workshop on the NRC's Reprocessing
4 Rulemaking. And, as you heard yesterday -- I'm having
5 trouble getting the attention of this group but --

6 But as we heard yesterday all of this
7 information and discussion is going towards assisting
8 the NRC with developing the technical basis for a
9 potential rulemaking on reprocessing. And that's what
10 needs to be done -- the technical basis -- before the
11 staff can proceed.

12 Further with the rulemaking, and as
13 Marissa pointed out to us, the ultimate decision about
14 whether the rulemaking will go forward is going to be
15 made by the Commission based on a staff paper that
16 will come up -- a Commission paper decision expected
17 in September 2011 I think you said -- '12.

18 MS. BAILEY: The draft technical basis is
19 September 2011. Our goal is to have a final technical
20 basis -- I think it's March 2012.

21 MR. CAMERON: Okay.

22 MS. BAILEY: To go to the Commission.

23 MR. CAMERON: Okay. So the Commission
24 decision about whether to move forward with the
25 rulemaking will be in the 2012 time frame. All right.

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1 I wanted to give you a preview of the
2 three remaining agenda items for today. But I also
3 wanted to open the floor after I do that to any
4 burning issues from yesterday that we need to discuss
5 -- any questions, clarifications, observations --
6 Beatrice.

7 MS. BRAILSFORD: Could you just have folks
8 do a real quick introduction? We've got like two or
9 three new people here today.

10 MR. CAMERON: Good. Let's do that then.
11 Let's start with Tom Hiltz. Tom?

12 MR. HILTZ: Good morning again. Tom
13 Hiltz. I'm a branch chief in the NRC's Office of
14 Nuclear Materials Safety and Safeguards. My branch
15 has been responsible for about the last two years for
16 work on the reprocessing frame work.

17 MR. ROSS: James Ross. I'm a vice
18 president with GE Hitachi Nuclear in the nuclear
19 licensing group. We have our own recycling technology
20 that we'd like to commercialize and are very
21 interested in the regulations that are going to be
22 developed around that.

23 MR. HOGG: Robert Hogg with Babcock and
24 Wilcox Licensing.

25 MS. CLARK: Anne Delane Clark. I'm the

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1 coordinator [indiscernible] Radioactive Waste
2 Consultation Task Force. I work for the State of New
3 Mexico, and my main area of expertise is radioactive
4 waste transportation.

5 MS. BRAILSFORD: My name is Beatrice
6 Brailsford. I'm with the Snake River Alliance,
7 Idaho's nuclear watchdog and advocate for clean energy
8 since 1979.

9 MR. HANCOCK: Don Hancock, Southwest
10 Research and Information Center here in Albuquerque.
11 Again, welcome to Albuquerque for those of you who are
12 just coming. We work on a wide variety of nuclear and
13 non-nuclear issues primarily related to waste.

14 MR. BADER: Sven Bader, AREVA Federal
15 Services, Charlotte. I'm the licensing manager.

16 MR. PHAM: I'm Tom Pham, the senior staff
17 in the material control and accounting branch within
18 the Division of Fuel Cycle Safety and Safeguards with
19 NRC.

20 MR. CAMERON: And that's Nuclear
21 Regulatory Commission.

22 MS. BAILEY: Marissa Bailey, deputy
23 director in the Division of Fuel Cycle Safety and
24 Safeguards in the Office of Nuclear Material Safety
25 and Safeguards.

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1 MR. STRONG: Rex Strong, Sellafield,
2 Limited, United Kingdom.

3 MR. KOHEN: Morning. My name is Marshall
4 Kohen. I'm a security specialist with the Office of
5 Nuclear Security and Incident Response in the NRC.

6 MR. MCCULLUM: Rod McCullum, Nuclear
7 Energy Institute. I lead the industry's Recycling
8 Task Force. It's very interested in the work NRC is
9 doing to develop this rule.

10 MR. STOUT: Dan Stout, Tennessee Valley
11 Authority. I work in the nuclear generation
12 development and construction organization.

13 MR. BRESEE: Jim Bresee, U.S. Department
14 of Energy, Office of Nuclear Energy. My area of
15 responsibility is advanced fuel cycle separations and
16 waste farm.

17 MS. REED: Wendy Reed. I'm a radio
18 chemist in the Division of Risk Analysis in the Office
19 of Nuclear Regulatory Research at the NRC.

20 MR. REED: Phil Reed. I'm in the Division
21 of Risk Analysis at NRC. I'm a member of the working
22 group that's putting the technical basis document
23 together.

24 MR. CAMERON: Thank you. Thank you all,
25 and thank you, Beatrice, for that suggestion.

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1 In terms of today's agenda we're going to
2 start with the issue of security and safeguard issues
3 related to reprocessing. We have Marshall Kohen with
4 us who's going to tee that up for us and talk to us
5 about some of the issues there. One obviously is non-
6 proliferation. Then there's the material control and
7 accounting aspects of that. And we may get into
8 transportation issues there also.

9 We're going to do that this morning. And
10 at one o'clock this afternoon when we reconvene we're
11 going to go to the very important issue of waste
12 management issues connected to reprocessing. And we
13 will have Mike Lee from the FSME staff -- and I always
14 have to use that acronym because I never can remember
15 the name of the office -- but, anyway, FSME.

16 He'll be here to tee that up for us. And
17 some of the issues there is if there's -- what do you
18 do with the high-level waste that might result from
19 reprocessing operations -- what about what's called
20 waste incidental to reprocessing. And there's a whole
21 issue of the classification level of the low-level
22 waste from that. So we'll have a discussion on that.

23 And then we're going to proceed to
24 environmental protection, our last issue. And I think
25 we've -- or at least I've mentioned it many times that

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1 there's two rulemakings -- important rulemakings in
2 the wings that are going to be -- have very important
3 implications for reprocessing.

4 And one is the EPA's rulemaking to revise
5 40 CFR 190. Too early to tell when -- what they're
6 going to be doing with that.

7 There's also going to be potential
8 revisions to the NRC's radiation protection
9 regulations in 10 CFR Part 20 at some point. And I
10 think there's a NRC staff paper due to the Commission
11 next March -- around that time frame that will make
12 recommendations for how the staff thinks the NRC
13 should proceed with revising 10 CFR Part 20.

14 So rather than spend a lot of time on
15 those issues -- although I do want to give people an
16 opportunity to at least comment on those two
17 rulemakings in terms of concerns and ask questions
18 about them.

19 But I think the most profitable thing to
20 do during that session might be to talk about what
21 types of environmental review issues there are for
22 Marissa and Tom, the NRC staff, in terms of this
23 reprocessing rulemaking. In other words, is there
24 going to be an environmental impact statement on a
25 rulemaking and what are the scope of issues that

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1 should be considered in that environmental impact
2 statement.

3 So we'll focus on that. And I'm going to
4 -- for that session I'm going to have Miriam Juckett,
5 my colleague from the Southwest Research Center -- and
6 pretty soon I may be working for Don -- I don't know.

7 But any rate Miriam will facilitate that part of it
8 for us. And then we're basically done.

9 Now, we have time for a reprise of
10 yesterday. You worked really, really hard yesterday
11 in terms of getting a lot of information out on this
12 schematic of how this rulemaking framework might work.

13 And at least from my perspective it was interesting
14 to listen to the discussion of the performance
15 requirements which some refer to as a surrogate for
16 the safety goal. And that was that chart with highly
17 unlikely, et cetera, et cetera.

18 The performance requirements plus the
19 baseline design criteria, at least NEI parlance,
20 formed the safety envelope for the licensing of the
21 facility plus the integrated safety assessment, and,
22 as we talked about yesterday, supplemented by PRA as
23 appropriate. That produces the Items Relied On for
24 Safety -- the IROFS.

25 And then there's the whole issue of

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1 [indiscernible]. And you heard yesterday the approach
2 of NEI in Seven X was to use the [indiscernible] for
3 those IROFS where there could be high consequence
4 events.

5 So there was a lot of information out on
6 that. We had some good discussion about the
7 performance-based/technology neutral versus
8 prescriptive approaches to the rulemaking.

9 So there was a lot of hard work done
10 yesterday. And I don't want to forget the larger
11 policy observations that were brought up by Beatrice
12 and Don about priority in the use of resources in
13 terms of this project versus others, and from the host
14 state perspective that there's a whole lot of issues
15 in this state that the NRC has responsibilities for
16 that need some attention paid to.

17 So that's sort of my summary of yesterday.

18 But are there any things that -- any questions -- you
19 know after a night of reflection on this are there
20 some issues that you wish you would have brought up
21 yesterday? Are there any clarifications that we need
22 to talk about before we go to Marshall for the tee-up
23 on safeguards and security? Anybody? Beatrice?

24 MS. BRAILSFORD: Could you just clarify
25 from your flip chart if the integrated safety analysis

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1 -- are you -- before you go to that step are you
2 assuming a technology neutral approach? Because, you
3 know, yesterday --

4 MR. CAMERON: That's a -- no, that's a
5 great question because that's the piece that isn't on
6 there -- is how does all this relate to the approach
7 that's taken. And I'm going to ask for comments
8 around the table on that issue because it seems that
9 inherent in using the performance requirements BDC
10 that has the hallmarks of a performance-based
11 approach.

12 And I will turn to the experts on that.
13 Marissa?

14 MS. BAILEY: I don't think that there's a
15 presumption of a technology neutral approach with an
16 integrated safety analysis.

17 MR. CAMERON: Okay. Anybody else --
18 comments on that? Beatrice, does that sort of give
19 you your answer? Okay. All right. Yeah, sure, we
20 can do that. And just introduce yourself to us for
21 the record.

22 MS. PARROTT: Hi. I'm Jack Parrot. I'm
23 with the NRC. I'm a member of the public. But since
24 I will be a staff member working probably on this
25 rulemaking what -- I didn't think I hear discussed

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1 much yesterday was one step versus two step licensing.

2 And since I wasn't at the Rockville meeting I would
3 like to hear input on that if that is okay at this
4 point.

5 MR. CAMERON: No, that -- thank you.
6 Thank you, Jack. We spent a lot of time yesterday on
7 performance-based versus prescriptive. There were
8 some other issues in that first agenda item. And Jack
9 is referring to one of them, which is the whole idea
10 of do you follow the model that has been used in new
11 reactors, for example, of having -- and other places
12 one step licensing for this rather than two steps, the
13 two steps being I believe -- and please correct me if
14 I'm wrong -- that first of all the license applicant
15 had [indiscernible] construction permit and then later
16 has to come in for an operating license.

17 But let's have a little discussion on
18 that. And Rod -- Rod, go ahead.

19 MR. MCCULLUM: Yeah. I think -- and we
20 discussed this a little bit amongst ourselves
21 yesterday before we came knowing it would come up --
22 and thanks, Jack, for bringing it up.

23 But from the perspective of industry I
24 think we'd like to be able to keep our options open in
25 this area. Obviously with new reactors the motivation

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1 for one step licensing is to reduce business risk --
2 that before you make massive investments of billions
3 of dollars literally that you have some certainty that
4 the thing has been licensed.

5 Now, you had -- in Yucca Mountain you had
6 a return to the two step process. That was something
7 first of a kind. And in a first of a kind
8 application, depending on again a lot of policy
9 decisions -- and, again, we run into that where
10 regulation and policy make -- maybe the moving forward
11 with the recycling facility would be at such a pace
12 anyway that a two step approach would make sense --
13 gain a little bit a certainty then gain a lot.

14 But, then again, you might have an
15 applicant that has -- really what it goes down to is
16 how much -- to what extent is this going to be
17 entirely a free market enterprise and to what extent
18 this is going to be part of a government policy. And
19 we don't really know that yet. So I would say let's
20 keep our options open.

21 MR. CAMERON: And I think that we might
22 want to get some comments from the NRC staff and
23 others -- is that Rod talked about the possible
24 benefits of one step from the standpoint of the
25 license applicant. But I would imagine that there

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1 might be efficiency and effectiveness issues there
2 with one step for the regulator also. Marissa?

3 MS. BAILEY: Well, I'm not sure I have an
4 opinion. But I think I just wanted to point out that
5 under Part 70 we do have both one step and two step
6 licensing.

7 MR. CAMERON: Already.

8 MS. BAILEY: The enrichment facilities
9 like LES and AREVA Eagle Rock are going through -- or
10 have gone through the ones that process, whereas the
11 [indiscernible] facility is going through a two step
12 process. I think I see advantages and disadvantages
13 with both, so I would like to, like Jack, get some
14 input from the stakeholders.

15 MR. CAMERON: Okay. Well, let's go to
16 Dan. And then I want to see if Beatrice, Don, or Anne
17 have any opinions on this. Dan?

18 MR. STOUT: And just to amplify a little
19 on what Rod said, there are a couple of other factors
20 that weigh into a decision on making the investment --
21 the financial structure of the company making the
22 investment -- you know, whether your cash flow is
23 going to be heavily financed or not -- the maturity of
24 the technology that you're using and which will go
25 hand-in-hand with the size of the facility and the

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1 investment that you're making.

2 In other words, if it's a first of a kind
3 a logical approach might be to build a demonstration
4 size facility. And you may choose to do that in a two
5 step approach given that it's a less substantial
6 investment and to recognize that given its first of a
7 kind nature that the design will continue to mature
8 through the process. So it could be a business
9 decision to go in more of a two step like approach.

10 If you're hoping to deploy a very robust
11 technology -- one that's been demonstrated
12 commercially already -- and you're choosing to
13 approach it in a business perspective of maximizing
14 the amount of debt, minimizing the amount of equity
15 type of approach, you would want to have a mature
16 design, go in initially with that mature design, and
17 seek to get the one step license to reduce the
18 regulatory risk in commercialization.

19 MR. CAMERON: Okay. Thanks, Dan. And I -
20 - as we're talking about this I realize that maybe
21 there should be some information put on the table
22 about what the implications are of one step licensing
23 in terms of the NRC adjudicatory hearing process.
24 Okay?

25 And I don't want to necessarily expound on

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1 that myself as the facilitator here, but there are
2 implications -- and not necessarily bad ones -- but
3 there's a difference in terms of whether you're using
4 one step or two step licensing.

5 But, Tom, I don't know if you want to
6 address anything like that in your comments, but go
7 ahead.

8 MR. HILTZ: Actually I just wanted to seek
9 some additional understanding of the rationale for a
10 one or two step. It seems to me that if you're issued
11 both a construction and operating license that the
12 only additional investment that you have is the
13 investment -- and I'm not sure what the delta would be
14 between the NRC staff reviewing just for a
15 construction permit and reviewing for both a
16 construction and operating license.

17 But I'm not clear -- sure I understand the
18 rationale because it seems to me the biggest financial
19 risk is in the construction. So it seems to me if you
20 have a one step license and you proceed through
21 construction and then you decide you're not going to
22 operate, well, you have the option to not operate.

23 If you get a construction permit only --
24 or construction license only then you're authorized to
25 construct. But then there seems like there's just

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1 additional uncertainty from -- moving from the NRC
2 from a construction phase to an operating phase. So I
3 don't completely understand the logic.

4 I mean, I don't -- I personally don't see
5 a problem with constructing a regulatory basis that
6 allows for a one or two step. I just don't
7 necessarily see the rationale.

8 MR. CAMERON: And I'm going to go to Dan
9 and spend -- and -- we're looking at this from
10 perspective -- we're talking right now about the
11 perspective from the industry's point of view. We
12 might want to turn to Phil or any of the others of you
13 from the NRC to talk about -- well, what does a one
14 step process -- what advantages does that give the
15 regulator in terms of focusing resources -- whatever.

16 I think that you don't want to just -- if
17 that's the case then it's fine. But the arguments for
18 one step licensing might be broader than just the --
19 that the industry is putting forward. Not to minimize
20 that, but we might as well get all the advantages out
21 on the table. Let's go to Dan and then to Sven.

22 MR. STOUT: I think a lot of your points
23 are dead on. In a one step licensing approach you
24 need to have a mature design upon which that license
25 is based. And that means from a construction

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1 standpoint -- from a management standpoint your
2 resources -- you're spending a lot of time and money
3 on that design.

4 And then you hand it over to the NRC. And
5 in the meantime what do you do with your staff? So
6 it's a resource management challenge to support that
7 one step licensing process. The time that the NRC
8 takes to do its thorough review and issue permit is a
9 long window to retain your resources and be ready for
10 that construction phase.

11 So it's -- from a resource management
12 perspective, especially on a first of a kind
13 technology, it's a challenge. And I'm just suggesting
14 that it would be beneficial to have the flexibility to
15 do either a one step or two step to recognize that you
16 could have unique and different recycling technologies
17 being proposed where you would have a mature -- where
18 it's fairly easy to come up with that mature design or
19 another where it's not easy.

20 And the resources needed to generate that
21 license application are different in those two cases.

22 And the business implementation can be different
23 depending upon the entity going forward with
24 construction. So the need for a reduced risk from a
25 financial perspective can vary depending upon the

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1 entity deploying.

2 So, you know, when we talk about
3 regulatory risk -- and, frankly, it's predominantly
4 the legislative process -- the hearing process where
5 the greatest uncertainty lies. The staff have been
6 very good, especially recently, at laying out
7 schedules and then delivering to them. And when that
8 has become routine an investment community will reward
9 that consistency.

10 MR. CAMERON: Thanks, Dan. And, Sven, and
11 then we'll go to Phil and then check in with Beatrice
12 and Don and Anne to see if they have anything that
13 they might want to say on this.

14 MR. BADER: I'm to add [indiscernible]
15 Triple F they didn't have much of a choice. There's a
16 bit of a land mine in Part 70.

17 MR. CAMERON: A land mine?

18 MR. BADER: 70.23(b), which forced
19 [indiscernible] M Triple F to basically demonstrate
20 that its principle PSSCs -- not IROFS, but principle
21 PSSCs, which is something from the construction
22 authorization, are constructed appropriately before
23 they can get an operating license.

24 So, you know, I guess my -- the point of
25 this is [indiscernible] M Triple F is kind of forced

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1 into a two step approach, even though I think it was
2 very beneficial for them. The other point is that,
3 you know, we need to kind of avoid these type of
4 clauses in a revised regulation that, you know, might
5 not be captured by somebody who's looking at it from a
6 fuel fabrication facility standpoint as opposed to a
7 recycling facility.

8 MR. CAMERON: Great. Thanks, Sven. That
9 raises another issue -- long-term parking lot issue --
10 perhaps is, are there going to be implications if this
11 rulemaking goes forward -- whatever approach is taken
12 are there implications from the approach taken in this
13 rulemaking for other -- for existing parts of the NRC
14 regulations that might need to be changed. That's a
15 long-term thing.

16 But -- hey, Phil, what about -- what do
17 you have to say on this?

18 MR. REED: The reason we are addressing
19 the one step licensing process is because in the
20 Commission paper that we sent up, the SRM that came
21 back said that we should look at the one step
22 licensing process for Part 52 and apply it to a
23 reprocessing plant.

24 I think there are three areas that we're
25 really looking for input from with this process. I

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1 think the first one is a siting requirement. As you
2 know, the one step licensing process does allow the
3 siting to be done either inside the one step or
4 outside. And it does give you flexibility to do this
5 siting process outside because it does take a lot of
6 time and effort, resources, and all the activities
7 that go along with the states.

8 So one of the things that is useful is
9 which way do we go? Do we put it outside or do we put
10 it inside and let the one step licensing process cover
11 the siting aspects?

12 MR. CAMERON: And let me just stop you
13 there so that we -- I -- so that everybody understands
14 what you're talking about -- inside and outside. And
15 are you talking about the use of -- as in Part 52 for
16 reactors of an early site permit?

17 MR. REED: Very similar, yes. That's
18 exactly right.

19 MR. CAMERON: Okay. And that -- can we --
20 we should just explain, early site permit is an option
21 open to an applicant for a facility to basically get
22 the environmental approval for the site -- bank the
23 site basically for future use. And I'm being very in
24 artful about that. But does anybody -- do you want to
25 explain it a little bit more so we make sure that

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1 people outside the direct frame know what that is?

2 MR. REED: Well, I think you explained it
3 very well. It's a very time consuming, can be
4 expensive process. If you do get the site permit --
5 early site permit then you can come in for a COL -- a
6 combined operating license -- and everything seems to
7 work well.

8 Now, Part 52 does give you the other
9 option of if you do come in for a COL you can come in
10 just with a blank sheet and then the siting aspect
11 will be treated within that entire process.

12 MR. CAMERON: So that's one issue that the
13 working group is looking at. And you said there were
14 three that you wanted to talk about.

15 MR. REED: The other big issue is this
16 concept called ITAAC, which is the Inspection Testing
17 and Acceptance Criteria. And it's not really clear at
18 this point exactly what is going to be needed for
19 this.

20 And I know there's a considerable database
21 built up for reactors, but when it comes to designing
22 and putting together a regulation for reprocessing
23 it's a little bit more difficult to do. And so we're
24 looking for some input from the public as to how we
25 should approach this.

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1 MR. CAMERON: Okay. And that model is, at
2 least in -- with new reactors the issue of ITAAC and
3 inspection tests -- it's like [indiscernible] FME for
4 me. I mean, does anybody want to --

5 MR. REED: Inspections, Test Analysis, and
6 Acceptance Criteria.

7 MR. CAMERON: Okay. The idea is that with
8 one step the applicant comes in for combined operating
9 license. If they get their license, then the last
10 step in that process is to make sure that they have
11 met all of the ITAAC. They have to demonstrate that
12 there can be a second adjudicatory hearing on whether
13 the ITAAC were met. The first adjudicatory hearing is
14 on whether the license should be issued in the first
15 place. And, Rod, clean up this if you need to.

16 MR. MCCULLUM: Yeah. Or -- yeah, I'll try
17 to clean it up. I think the ESP is an excellent idea.

18 I also work -- I lead industry's early site permit
19 task force. And there is growing interest --
20 originally in the one step process there was a desire
21 to want to do everything all at once in the combined
22 operating license. So we started to move away from
23 ESPs.

24 We're starting to move back to them.
25 We're seeing that for some applicants there is utility

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1 in addressing siting issues before you've made the
2 investment that you would in a license application.
3 There's a lot of interactions you can do with your
4 state and local stakeholders through the early site
5 permit process -- do that before you make too many
6 more significant decisions. Make sure you can build
7 acceptance or know you didn't build acceptance before
8 you put that money at risk.

9 ITAAC is a big issue. We're just testing
10 those waters in Part 52 now and we'll let you know how
11 that goes. But something -- when you have a one step
12 process, you know, that very last part of it does have
13 to be addressed so that it doesn't become the
14 equivalent of a two step process.

15 And I want to get back to Tom's question
16 and also explain the flip side of the coin Dan talked
17 about. Dan talked about the motivation where in this
18 case you might want to do a two step process.

19 I know -- the reason we moved to one step
20 licensing -- the reason Part 52 was written -- I
21 worked very early in my career in a nuclear plant that
22 had its construction permit prior to Three Mile Island
23 and then was in the post-Three Mile Island seeking its
24 operating license.

25 That plant was originally scheduled to be

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1 a \$500 million. We brought it online at \$6.2 billion.

2 The amount of regulatory change that occurred around
3 Three Mile Island -- and I wouldn't blame it all on
4 regulatory change -- there were things internal to the
5 project too -- was massive and unprecedented.

6 And, you know, things had been purchased,
7 things had been installed, things had -- valves had to
8 be cut out, piping had to be rerouted, designed had to
9 be redone, systems we didn't envision being part of
10 the plant had to be installed.

11 No responsible executive would ever want
12 to go down that road again. Now, that plant has a
13 happy ending because it's been providing electricity
14 now safely for 20 years and it's a good asset to the
15 place in which it's located.

16 But -- so there is a tremendous amount of
17 business risk to getting a construction permit and
18 then spending money actually buying pressure vessels,
19 installing them, pouring concrete, doing all those
20 things, and then finding out in order to get your
21 operating license you have to do something different.

22 That's the motivation for one step licensing.

23 That being said, when you have a
24 developing technology as Dan alluded to where you are
25 a first of a kind, you know, you have to manage this

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1 differently obviously. You may want to take that risk
2 because it would actually be a greater risk to try to
3 go for it all at once when you need that first step to
4 kind of tell you where to go.

5 So, yeah, we really need the option, and
6 it really depends on what technologies are deployed
7 under what policy framework.

8 MR. CAMERON: Okay. Thank you. Let me
9 see if Beatrice or Don or Anne has any reaction to
10 this discussion. Don, do you want to --

11 MR. HANCOCK: Well, I have several
12 reactions. I was glad that Phil brought up the siting
13 issue because I was going to bring it up. I think
14 that's a very major issue.

15 In the country we have four reprocessing
16 sites and we have two other sites that were somewhere
17 in the reprocessing process in terms of Morris and
18 Barnwell. So I think there will be a major issue from
19 a public standpoint in terms of whether a reprocessing
20 site is at -- you know, a existing past reprocessing
21 site, if I can use that terminology, if it's at a
22 already licensed site for something else other than
23 reprocessing, or if it's at a site that hasn't ever
24 gone through a licensing process.

25 So I would agree with the idea that the

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1 siting issue is going to be a major one and would
2 certainly encourage both the industry and the NRC to
3 think very carefully about how to handle that issue.

4 As everybody I think is aware, before I
5 say it once again, a reprocessing plant in the United
6 States is going to be very controversial. And so the
7 siting is going to be one of the things that's going
8 to be seriously related to that. So, you know, that's
9 going to have to be done.

10 My organization has not worked on reactor
11 licensing -- you know, one step or two steps. So I'm
12 not speaking out of our organization's personal
13 experience. I do know from talking with organizations
14 in other parts of the country that have dealt with it
15 that there has been significant concerns about the one
16 step licensing process for reactors. And, again, I
17 would hope that's very seriously considered in terms
18 of what a reprocessing rule would look like.

19 I actually am pleased to hear that the
20 industry folks are considering -- you know, doesn't
21 necessarily have to be one -- might be reasons to do
22 two -- I mean, that's good. I'm glad to hear that. I
23 -- again, I think a reprocessing plant is going to be
24 very controversial wherever you put it, et cetera.

25 I think a one step process for a

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1 reprocessing plant is likely to be an additional part
2 of the controversy if that's the way -- if a one step
3 is going to be, you know, the way it's going to work.

4 So I think that needs to be thought through pretty
5 carefully as well.

6 I -- as has been said several times -- and
7 this issue I know was discussed at the September
8 workshop and there were concerns about one step
9 expressed there too -- so I'm not the first one to
10 talk about this.

11 But I think from a public standpoint it's
12 a little counter-intuitive to say that a reprocessing
13 plant would be a mature design similar to reactor
14 licenses that can do one step because we've all agreed
15 that, yeah, if you want to talk about mature
16 reprocessing technology in the United States those all
17 have pretty bad outcomes.

18 So if we're talking about the mature
19 technology being pure access that's been done in the
20 United States up to now that's -- you know, that is a
21 problem. If we're, as I think I and other people
22 assume and what at least some of the industry have
23 said, is there will -- that whatever reprocessing
24 technology comes forward under technology neutral or
25 non-technology neutral approaches there will be some

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1 new aspects for the United States if it's -- even if
2 it's using reprocessing technology from some other
3 international -- where there's some international
4 experience with.

5 So from a U.S. standpoint to talk about
6 this first license application, if there ever is one
7 for a reprocessing plant being mature technology and
8 fitting into a one step process, seems pretty -- a
9 pretty difficult concept to me.

10 MR. CAMERON: Okay. Thank you. Thank
11 you, Don. And let's go to Beatrice and Anne. And
12 then I want to check in with Sven. I thought you
13 might -- you were sort of picking your
14 [indiscernible].

15 (Unintelligible voices.)

16 MR. CAMERON: Okay. We'll see about that.
17 But let's go to Beatrice and Anne and then to Tom and
18 perhaps the reluctant Sven. Beatrice.

19 MS. BRAILSFORD: Thank you. And I think
20 you're both right, and Don has said most of what I was
21 -- my buttons.

22 I do think that the -- you know, the whole
23 early site permit thing also raises another question,
24 which is how robust is the relationship between the
25 NRC licensing process and the National Environmental

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1 Policy Act. And, you know, site selection is a key
2 step of NEPA EISs. And if it has already been made it
3 makes a mockery of, you know, a fundamental law in the
4 United States I think.

5 Do you want to counter me or do you want
6 me to just --

7 MR. CAMERON: No, I just wanted to explain
8 that there is a full environmental impact statement
9 done on the early site permit. Okay?

10 MS. BRAILSFORD: Thank you.

11 MR. CAMERON: You're welcome.

12 MS. BRAILSFORD: So you did want to
13 counter me -- and correct me. And I thank you for
14 that. I guess my only other things to add are the
15 whole question of whether you have a two step process
16 and then something like Three Mile Island intervenes
17 between step one and step two.

18 God willing and good regulation something
19 like Three Mile Island will not happen. If it did
20 happen again construction on similar nuclear
21 facilities would be compromised no matter if you had
22 all your papers in a row or not. So I'm just saying
23 that as a real world response.

24 I also think this whole question of, well,
25 if we had mature technologies -- and I couldn't agree

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1 more with Don that I don't think that there is a
2 mature reprocessing technology in the world that
3 anyone would want to be -- to replicate here in the
4 United States as our first step back into the
5 reprocessing world.

6 So I don't think that there is a mature
7 technology, you know, kind of off-the-shelf kind of
8 stuff. But to the extent that aqueous processing is
9 mature and pyro isn't I think then again that does go
10 back to what is the effect of this technology neutral
11 approach. If we have two step licensing -- I mean,
12 you know, where's the -- how many exemptions are we
13 going to have in this neutral process.

14 And then I guess I would just like to ask
15 Rod -- you made a statement -- no, it wasn't Rod -- it
16 was [indiscernible] -- whose name is -- don't help me
17 -- Dan. Free market versus government policy -- oh,
18 no, it was Rod -- who was it? Anyway, I would like to
19 -- whoever contrasted we don't know if this is going
20 to be a free market enterprise or a government policy
21 I'd like some further information about that. Thank
22 you.

23 MR. CAMERON: Can we just follow that --

24 MS. BRAILSFORD: It was Rod.

25 MR. CAMERON: Can we just follow that --

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1 finish that thread and then we'll go to Anne and Tom
2 and Sven. Rod, do you want to respond to Beatrice?

3 MR. MCCULLUM: Yeah. I'll given an
4 example and I'll -- this will draw Sven into it. But
5 let's say, for example, if Sven was going to build a
6 twin of La Hague here in the United States, which that
7 -- at least the French think it's a mature technology
8 -- and had private investment all lined up to support
9 that he would probably want a one step licensing
10 process. He would not want to take the risk of having
11 regulatory positions change for whatever reason in
12 between the two steps.

13 However, if the federal government, as Dan
14 has suggested -- I think it why you were confused
15 between the two of us because we were both talking
16 about it -- was going to take a more incremental
17 approach and first license a prototype of a facility
18 that would allow it to make some technology choices
19 going -- with some technology choices still open and
20 then finalize the design after having learned what
21 they learn from the construction permit process.

22 And if that was a public/private
23 partnership, which is what I meant -- that the federal
24 government was investing in that technology
25 development and seeking private partners to actually

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1 build the facilities -- now, again, none of these
2 decisions have been made, and it could run anywhere in
3 the spectrum.

4 One thing -- and I don't want to lose this
5 thought that has come up that works in both cases
6 though is an early site permit type process. And
7 particularly having heard the concerns that Phil and
8 Beatrice expressed here is that, that is an
9 opportunity in a really technology neutral way.

10 I know we have -- in the reactor world we
11 have early site permits that envelope a range of
12 reactors. The applicant does not even know what
13 reactor they're going to build yet, but they put
14 together a plant parameter envelope, addressing the
15 environmental impact issues, interact with the
16 stakeholders, then determine whether or not they could
17 build a reactor on that site -- is that site suitable
18 for 1,600 megawatts or whatever, you know, of a
19 reactor.

20 So either -- in either process I think all
21 interests might be served by that. And I think that's
22 something I hope we would capture out of this workshop
23 is there's significant value in that.

24 MR. CAMERON: Okay. Thank you, Rod. And
25 just for further clarification on that, when you talk

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1 about the public/private partnership are you referring
2 to something similar to the Department of Energy loan
3 guarantees or things like that?

4 MR. MCCULLUM: It could be loan
5 guarantees. There were all sorts of things envisioned
6 in [indiscernible]. I don't want to be specific
7 because neither the private sector nor the federal
8 government has proposed anything specific yet.
9 However, it is possible that something could be put
10 together where there would be some federal investment
11 as well as some private investment.

12 But, again, if Sven was going to line up
13 private investors and build La Hague II somewhere here
14 that would be a different story.

15 MR. CAMERON: Okay. Good. Thank you.
16 Let me check in with Anne. Anne, do you have any
17 thoughts on this one step, two step process?

18 MS. CLARK: I actually don't have any
19 additional concerns to what has already been
20 expressed. I think Don and Beatrice both expressed
21 the same things that I was thinking.

22 MR. CAMERON: Okay.

23 MS. CLARK: I don't have anything else to
24 add.

25 MR. CAMERON: That's fine. Thank you.

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1 Let's go to Tom and then Sven. And I think that we're
2 probably ready to go to our first agenda item after
3 this. Go ahead.

4 MR. HILTZ: Thanks, Chip. I just wanted
5 to maybe add to the discussion a little bit and see if
6 there's any insights. Phil mentioned the early site
7 permit. He mentioned ITAAC. And one of the
8 differences between a Part 52 process in general and a
9 Part 70 one step licensing process is the concept of a
10 certified design.

11 Now, in Part 52 there are likely multiple
12 candidates to be used for a certified design. But
13 there are also advantages I think in the hearing
14 process that resolves issues on the design early on.

15 So I'm wondering if there's any thoughts
16 about -- as we consider one step, two step what parts
17 of the Part 52 model we want to move forward with, you
18 know, in addition to some of the concerns about issues
19 with ESP. Is there any prevailing thoughts about a
20 certified design?

21 MR. CAMERON: Okay. And let's go to Sven
22 and -- who has a point to make. And, Sven, if you
23 want to also address Tom's -- if you have any thoughts
24 on Tom's point please do that. And then we'll go to
25 Rod.

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1 MR. BADER: Mine's more a sales pitch.
2 And, one, I would not personally finance a
3 reprocessing facility. I think when Rod pointed at me
4 I think he pointed at AREVA.

5 But the other point about mature design --
6 you know, we are in France on basically the fourth
7 design of a reprocessing facility [indiscernible].
8 That is built on U.S. designs so it's continuous
9 improvement from U.S. design.

10 In addition, you know, during the
11 [indiscernible] studies we did other alternative
12 process investigations basically trying to minimize
13 waste and look at proliferation resistance and so
14 forth. And that kind of -- you know, we introduced
15 the [indiscernible] process, and that's actually
16 something that we are building now in Japan -- or has
17 been built in Japan.

18 And in the United States there's actually
19 an aqueous polishing process in Triple F, which is now
20 licensed by the NRC -- well, there's a draft SER out
21 there that's not -- doesn't have an operating license
22 yet but -- so there is maturity in the technology.

23 And to address Tom's question about, you
24 know, do I need to have a certified design facility up
25 front, I mean, to me that's still two steps. And I

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1 think, you know, people [indiscernible] -- Part 52
2 sounds like it's a one step process but it's one step
3 [indiscernible] process. It's still a two step
4 overall process because you've got to get this
5 certified design up front.

6 And, you know, from AREVA's standpoint I
7 would like to say that, you know, we do have a mature
8 design. We would like to potentially build a facility
9 in the United States, but we really need some
10 regulatory certainty. You know, without regulations
11 we can't make a business determination, you know, and
12 -- you know, it's hard to work.

13 You know, I've heard discussion about
14 partnering with UE for these prototype facilities --
15 or start-up facilities. This wouldn't be a prototype.

16 I mean, this is an advanced technology, you know,
17 what we're talking about. And really what we're
18 talking about is probably the size of the facility and
19 how financially -- can you afford it or not
20 ultimately.

21 And so, you know, what we're looking for
22 is a regulatory certainty, and that allows us to build
23 the business models.

24 MR. CAMERON: Okay. And that goes back to
25 some of the discussion from yesterday about why are

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1 regulations needed in an earlier time frame. Sven?

2 MR. BADER: And I think Phil had a third
3 point that we haven't heard yet.

4 MR. CAMERON: Yeah. Phil, what was that
5 third point?

6 MR. REED: I think Tom just mentioned the
7 third point that we were concerned about. Because it
8 was brought up in the Rockville discussions and it
9 seemed like that perhaps -- well, it was either one or
10 four. But Tom expressed the concern --

11 MR. CAMERON: The design certifications.

12 MR. REED: Yeah.

13 MR. CAMERON: Okay. Thanks, Phil. And,
14 Rod, on design certification, then we'll go to
15 Marissa.

16 MR. REED: Yeah. And just to clarify, I
17 was referring to AREVA and not Sven personally. And
18 the record should show that even then it was a very
19 big capital hypothetical in front of that to
20 illustrate the example.

21 But the answer I think to Tom's question
22 is quite simple. The utility of the design
23 certification process was because we intended to build
24 quite a few reactors and it was all about
25 standardization and the idea that the different

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1 vendors could get their designs certified and then go
2 market those certified designs to different customers.

3 I think this is a walk before you run or
4 maybe you crawl before you run issue here. I don't
5 think we're at the point in the regulatory framework
6 we're looking at developing now where standardization
7 is really going to be an issue. There's simply not
8 going to be dozens of reprocessing plants.

9 So you would be requiring a lot of effort
10 and simply adding another step to the licensing
11 process if -- you know, you're going to be reviewing
12 the design anyway in the initial license application
13 whether it's one step or two step because it's first
14 of a kind. So as industry we would not see any
15 utility in a design certification.

16 MR. CAMERON: So the rationale that's
17 there for the design certification concept for
18 reactors in terms of standardization many designs is
19 really not there in the reprocessing.

20 MR. REED: That's correct.

21 MR. CAMERON: Okay. Thank you. Marissa?

22 MS. BAILEY: Just a clarification to what
23 Sven said so that there's no misunderstanding. NRC
24 has not issued a construction authorization or a draft
25 safety evaluation for reprocessing facility. What

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1 we've issued is a construction authorization and a
2 draft safety evaluation for the MOX fuel fabrication
3 facility.

4 MR. CAMERON: That's just sort of
5 enthusiastic wishful thinking on AREVA's part I guess
6 -- not Sven's. All right. Thank you. Thank you for
7 that.

8 Well, this is a good discussion. Thank
9 you, Jack, for bringing it up. And thank you, Phil,
10 for putting on the table the options that are facing
11 the -- the issues that are facing the working group.
12 And, Marshall, are you ready to tee up the safeguard
13 for us? Okay. Great.

14 MR. KOHEN: Well, good morning again. My
15 name again is Marshall Kohen. I'm a security
16 specialist in the office of Nuclear Security and
17 Incident Response at the NRC. Our office is
18 responsible for developing the security policy for the
19 Department, and my branch specifically works in the
20 area of the fuel cycle facilities.

21 I want to -- and I'm also the office's
22 representative on the working group for the
23 development of the reprocessing rulemaking.

24 I want to point out that my colleague Tom
25 Pham from NMSS is here as well. Although we security

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1 and MC&A complimentary disciplines security happens to
2 be -- the security policy happens to be in one office
3 and MC&A policy happens to be in a different office.
4 So while we work together Tom can answer specific
5 questions when it comes to material control and
6 accounting aspects.

7 What I'd like to do today is talk a little
8 bit about our involvement in this process really boils
9 down to the materials that are going to be at the
10 front end, the middle, and the back end of a
11 reprocessing -- a potential reprocessing facility --
12 and the protection of those materials.

13 So what I want to do primarily today is
14 talk a little bit about how we view the special
15 nuclear material, how the NRC categorizes those
16 materials, and I'll talk a little bit about how that's
17 potentially going to change.

18 And I'll apologize to those of you who
19 already know this or were at my talk six weeks ago or
20 both. We have some folks who weren't and so hopefully
21 this will be instructive for everybody.

22 Most of you probably know that the
23 regulations for safeguards and security are in two
24 parts. One is 10 CFR 73, which is the physical
25 protection of plants and materials, and then the

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1 material control and accounting aspects are covered in
2 10 CFR 74.

3 So what is special nuclear material -- or
4 SNM as we refer to it? SNM comprises plutonium,
5 uranium 235 and uranium 233 by definition. We divide
6 SNM into three categories, Categories 1, 2, and 3, for
7 security and MC&A purposes. And this is based on the
8 potential for the use of this material directly for
9 the production of a fissile explosive device or
10 indirectly for the production of those materials that
11 could be used.

12 And I want to really stress this. Every
13 time I talk about material categorization and the
14 table that's in the CFR I always want to make the
15 point that we're talking about one specific threat to
16 that material -- and that is the threat of theft of
17 that material from the facility or even from
18 transportation for use in an improvised nuclear
19 device.

20 We're not talking about sabotage here, so
21 it's a different threat that we definitely take care
22 of within the regulations and within the guidance.
23 But specifically we're talking about categorizing
24 material. We're talking about that specific threat.

25 These categories in the table are based

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1 solely on the quantity of material that's involved and
2 for U-235 the enrichment level.

3 So here is the table that NRC uses and
4 that is enshrined in the regulations. I'll give you a
5 second to look at it. A couple of things I guess that
6 I would point out that are not on the slide -- the
7 definitions that are used in the regulations are
8 strategic special nuclear material, which refers to
9 Category 1 material. SNM of moderate strategic
10 significance is the other name for Category 2
11 material. And SNM of low strategic significance is
12 the equivalent of Category 3. And so that's the
13 nomenclature that you see in the regulations as
14 opposed to Category 1, 2, and 3 for the most part.

15 So currently the material categorization
16 for the materials that would be used in a reprocessing
17 recycling facility campaign take account of all these.

18 Currently the nuclear power reactor fuels are
19 Category 3 materials. They have the enrichment -- and
20 even if they are of a certain quantity the enrichment
21 level of that material renders them Category 3.

22 Now, obviously, we protect nuclear power
23 plants not at a Category 3 level. We protect them at
24 a -- with stronger physical protection, and that's
25 based on the consequences of sabotage of that facility

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1 and the release of the material that would -- that
2 result.

3 Reprocessing and recycling would obviously
4 introduce plutonium and other transuranics. The fuels
5 -- any fuel containing greater than 2 kgs of plutonium
6 currently would be termed Category 1 regardless of the
7 isotopic or the form of the presence of any other
8 materials which would be of a different -- what we
9 would call an attractive level.

10 Any other TRUs -- or specifically other
11 TRUs, neptunium and americium have SNM-like
12 characteristics. This has been shown in numerous
13 studies. The current regulations, just to point this
14 out, do not consider -- the current physical
15 protection regulations do not consider the other
16 transuranics -- that is, neptunium and americium.

17 Plutonium is -- as you might guess from
18 that second bullet, is plutonium is categorized
19 without consideration of form or isotopic composition.

20 And I'll go back to the category table to show you.
21 If you have greater than 2 kgs of plutonium currently
22 it is a Category 1 quantity and it requires Category 1
23 level of protection and the appropriate measures.

24 As you may know, we have received an SRM -
25 - a Staff Requirements Memorandum -- from the

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1 Commission to proceed with revising the categorization
2 structure. We've been working on this for a while but
3 we -- and we've put up a paper to the Commission and
4 received a response, an SRM that has now been made
5 publicly available.

6 And part of that SRM is to include
7 material attractiveness as part of the upcoming
8 physical security fuel cycle rulemaking. This
9 rulemaking, which is a complimentary rulemaking --
10 this rulemaking will be the most comprehensive review
11 of Part 73 in somewhere between 25 and 30 years. The
12 -- obviously Part 73 has been revised numerous times
13 over the years, but it's been piecemeal.

14 This is the first time in quite a long
15 time that we're taking a comprehensive look at Part 73
16 to ensure that the physical protection measures are
17 appropriate. And the word that we have been using and
18 used when we brief the Commission is to right-size the
19 physical protection measures so they're appropriate to
20 the type of material to the attractiveness of the
21 material for use in a nuclear device, and so that
22 everything is in a graded -- more of a graded fashion.

23 It's already in a graded fashion with
24 respect to Categories 1, 2, and 3. But what we're
25 talking about doing is including, similar to what DOE

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1 already has, is another column in that table which
2 would be an attractiveness column -- nominally A, B,
3 C, and D. So it would stratify a little bit more the
4 categorization table to make a little bit more
5 appropriate consideration of the materials and the
6 other aspect of the materials that we needed to
7 consider.

8 The rulemaking will include not only this
9 re-look at categorization, but it will also take a
10 look at putting into the regulations a myriad of
11 orders that have been placed on certain facilities
12 since 2001. There was a need immediately after the
13 events of September 11 to put in place for specific
14 facilities with certain types of material -- immediate
15 orders -- and immediate compensatory measures to
16 upgrade physical protection. We're now going to take
17 a look at how to infuse those orders permanently to
18 the regulations for those types of materials.

19 What I'd like to do I think for the rest
20 of the couple of slides that I have is address a few
21 aspects of the SRM that have applicability to a
22 potential reprocessing and recycling facility.

23 What I've done is sort of excerpted a
24 little bit from the SRM. And, as I've said, the SRM
25 is publicly available so you're all certainly welcome

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1 to go look at it online.

2 The first one is that the Commission is
3 requiring us -- and we were going to do this anyway,
4 but it's now enshrined -- to engage a broad range of
5 stakeholders as we develop the rulemaking package,
6 including the international community.

7 The interesting aspect of this obviously
8 is that DOE has a categorization structure that
9 considers material attractiveness -- NRC currently
10 does not. We have the identical table that's used in
11 IAEA Information Circular 225, which is recognized
12 internationally as the standard for physical
13 protection, which has actually just been revised -- a
14 revision five is about to be published, or at least
15 finalized.

16 And so what we're trying to do is move
17 toward, as I said, a little bit more of a graded
18 approach. So what we need to do -- and we've known
19 this all along -- is to have discussions with our
20 international partners to make sure that we are still
21 abiding by the guidelines and in concert with the
22 guidelines that are in CIRC 225, as well as just
23 letting our international partners know where we're
24 going with this process.

25 Public meetings are in the offing for our

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1 particular rulemaking. We consider this part of that
2 structure that we're asking for comments from the
3 public. We've had initial discussions with a couple
4 of NRC licensees, with the other government agencies -
5 - Department of Energy, Department of State -- as well
6 as some international colleagues.

7 In fact, my branch chief was over in
8 Vienna last week in other bilateral discussions with
9 the IAEA. But included in that was a topic to discuss
10 with the IAEA a possible meeting or seminar on an
11 international basis to discuss what we're doing in
12 terms of material attractiveness. We intend to have
13 further technical discussions. We're going to need to
14 work with our domestic international partners on this
15 as well.

16 Second aspect of the SRM that I want to
17 touch on is the fact that the Commission did not
18 advocate having this particular rulemaking focusing on
19 categorization of material associated with
20 reprocessing. What does that mean? We're still
21 working on that.

22 What they've said is, instead, as a
23 separate effort, not on the same time frame -- we're
24 not in the same time frame as the rulemaking that
25 we're currently embarking on -- three aspects should

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1 be covered in a separate effort. One is the
2 categorization approach for reprocessing. And that we
3 understand to be the materials that are associated
4 with reprocessing.

5 The due date for -- at least what we
6 consider our due date for work on that would be in
7 concert I think with the due date that we're -- the
8 time lines that we're talking about for the
9 reprocessing rulemaking itself.

10 The second aspect that the Commission
11 mentioned was to put off the work on transport of
12 mixed oxide fuel. We are currently also working on
13 rulemaking for transportation security.
14 Transportation security is a part of Part 73 as well
15 as the fixed site security. We are working on that as
16 a parallel rulemaking and it will be closely
17 coordinated with the rulemaking that we're doing on
18 fixed site security.

19 The third aspect that the Commission noted
20 is that they wanted us to consider in this separate
21 effort what they called applications that use large
22 quantities of americium and neptunium. And obviously
23 they're referring to a reprocessing/recycling thing.

24 Currently there are small quantities of
25 americium and neptunium that are held by NRC

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1 licenses. But they're relatively small and we
2 envision that any large quantities would be produced
3 by a reprocessing campaign. So, again, this type of
4 analysis we assume will be provided concurrent and
5 consistent with the reprocessing rulemaking.

6 Final aspect of the SRM was that the
7 Commission pointed to specifically how we determine
8 what the threshold values will be in this new
9 categorization scheme. I showed you the
10 categorization table and it had numerical values that
11 were the thresholds for quantities to help you
12 determine what the categories were. The Commission is
13 interested in how we're going to do that analysis.

14 The analysis to provide those quantities
15 if -- and how they're going to be revised is going to
16 be [indiscernible] by both the current regulations or
17 current understanding of how those thresholds were
18 developed in the first place as well as, as I talked
19 about the -- we have to be sensitive to our
20 commitments internationally in terms of the numbers in
21 CIRC 225.

22 We -- part of the public process here is
23 to engage the public and to get feedback from our
24 international and domestic partners in how to develop
25 -- best develop those numbers. And we have a couple

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1 of ongoing studies that are going to provide us we
2 think some solid analysis and information to help us
3 make those decisions.

4 In terms of MC&A -- and I'll mention this
5 and if you have specific questions again I'm sure Tom
6 is much more capable of answering them -- Part 74 --
7 10 CFR Part 74.51 currently excludes reprocessing
8 facilities from the Category 1 MC&A requirements. And
9 so what this sets up is a situation in which we have -
10 - potentially have requirements that are not
11 consistent between facilities with similar categories
12 of material.

13 As I said at the last meeting my
14 understanding that there's a plan to remove this
15 exception in Part 74 in the upcoming MC&A rulemaking.
16 And Tom can correct me if I'm wrong on that.

17 So, with that, I want to put up the
18 discussion questions that we've had at the end of each
19 of these tee-ups and we can move from there.

20 MR. CAMERON: Thank you. Thank you very
21 much, Marshall. That was great comprehensive
22 overview. Before we go to discussion -- these
23 discussions questions is there any questions of
24 clarification for Marshall or Tom at this point about
25 the presentation? Beatrice?

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1 MS. BRAILSFORD: Marshall, on your slide
2 7, when you said the MOX transport consideration is
3 being put off, do you mean -- could you just explain
4 that? Because you were bullet 1 -- maybe I didn't
5 understand the slide.

6 MR. KOHEN: Sure. Maybe I wasn't clear
7 enough about that. The initial plan was to do
8 rulemaking and revise the requirements for fixed site
9 fuel cycle facilities -- Category 1, 2, and 3
10 facilities.

11 What we've realized then -- and I'm sure
12 if everybody knows, but we just completed a rulemaking
13 on Part 73.37 which has to do with transport of spent
14 fuel which is currently considered Category 2. But we
15 treat spent fuel a little bit differently from
16 physical protection standpoint in terms of
17 transportation.

18 What we're planning to do is to consider
19 the transport of MOX in the -- sort of this
20 comprehensive range of materials in terms of how it's
21 treated physical protection wise for transport. How
22 it's actually going to be couched in terms of
23 rulemaking I'm not sure we've fully decided because,
24 as you mention, the Commission said don't talk about
25 transportation of MOX in this rulemaking.

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1 Obviously if we're going to do a
2 comprehensive review of all the materials that are
3 being transported MOX is something that we're going to
4 have to think about. Again, how it's going to be
5 characterized I can't say at this time. But it's
6 something that we're going to have to consider in the
7 spectrum of materials.

8 MR. CAMERON: Okay. Dan, do you want to -
9 - are we still on the clarifying questions or do you
10 want to -- are you going to jump into that first
11 bullet question? (Pause.) Okay. Go ahead.

12 MR. STOUT: Just -- TVA is in discussions
13 with the Department of Energy on the use of MOX from
14 the Savannah River site. You know, we are in the
15 process of conducting the environmental reviews of
16 that whole process and plan to make a decision in 2012
17 on whether or not to use MOX as part of our fuel in
18 our reactors. And we encourage the NRC to be integral
19 in that whole process. You know, the first shipment
20 is 2017-ish or something like that. We're in this
21 formulation phase of the requirements and we need to
22 understand the level of requirements and the amount of
23 security that's going to be involved in this operation
24 as it comes onto our site and we interact with the
25 handoff of receiving the MOX fuel.

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1 And we encourage the NRC to continue to
2 collaborate with the Department of Energy and take a
3 graded approach to the appropriate amount of
4 safeguards and the security required with that kind of
5 fuel.

6 MR. CAMERON: Okay. Thanks, Dan. There's
7 -- this first bullet up there is a pretty global
8 question. Are there any aspects that need to be
9 revised or augmented to ensure secure use and safe
10 handling? Anybody have some thoughts on that?
11 Robert?

12 MR. HOGG: One of the things that has been
13 talked extensively about in the development of both
14 the NEI paper and this topic generally is the
15 application of safeguards by design which currently --
16 most of the operating facilities implement safeguards
17 by something other than initial design certainly since
18 they've already all been designed and most of the
19 activities of both security and measurement control
20 and accountability are implemented after the fact.

21 Certainly one of the things that we would
22 like to be sure is -- that if there's a safeguards by
23 design type criteria that it gets clearly stated and
24 the expectations for it be clear such that they can be
25 worked into the initial design of the facility.

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1 MR. CAMERON: Okay. Thank you. Marshall,
2 let me get your reaction and Tom's, if that's
3 appropriate, to the idea of safeguards by design. And
4 is that something that -- is there a useful analogy in
5 the NRC regulatory pantheon to safeguards by design?
6 Tom?

7 MR. PHAM: Our current regulation now are
8 not [indiscernible] by safeguards by design. We
9 understand that safeguards by design approach is a new
10 way the IAEA, the International Atomic Energy Agency,
11 want to do. And also within the U.S. different
12 organizations tried to endorse or tried to promote
13 that kind of safeguards by design.

14 My -- our opinion is right now safeguards
15 by design is a good way to think about -- consider
16 that building design part of the facility, especially
17 a new facility. One of the difficulties everybody run
18 into that include the IAEA we do not have clear
19 guidance, we do not have clear guideline how to do it.

20 But it just different countries use that
21 but on an experimental basis. And we -- but the
22 bottom line is our regulation now is not written by --
23 we don't have a requirement safeguards by design in
24 our safeguards regulation.

25 MR. CAMERON: But there are examples from

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1 other countries perhaps or something that the
2 International Atomic Energy Agency has developed that
3 could be used.

4 MR. PHAM: To clarify on that, the IAEA --
5 it's just a guidance -- it's not a requirement. And I
6 do not think that any country has any specific
7 requirement -- safeguards by design requirement in
8 their regulations.

9 MR. CAMERON: Okay. Thanks, Tom. And
10 then -- and Rex may have some experience with this.
11 We're going to go to him, but this safeguards by
12 design is definitely something that should be looked
13 at -- considered for this particular rulemaking. Rex?

14 MR. STRONG: We have two processing plants
15 at our site. And they have been fully within
16 international safeguards since the late 1990s. So in
17 our case all the requirements of the International
18 Atomic Energy Agency flow through, not by our
19 regulatory route as you would recognize it because
20 international safeguards obligations are dealt with by
21 one of our government departments and then down to us.

22 But in addition to that, because U.K. is a
23 member of the European Union we are subject to the
24 safeguards control which come through the European
25 Commission.

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1 In the specific case of the design of the
2 thermal oxide reprocessing plant safeguards
3 considerations were fundamental to the design of that
4 plant as the design evolved. So there are specific
5 features designed into that plant which are there
6 because the safeguards authorities needed them to be
7 there in order to grant the equivalent of their
8 licenses.

9 So in a sense there is actually
10 international experience of this kind of thing which
11 comes into play when organizations are engaging in
12 reprocessing for a commercial as distinct from
13 military purposes. So if it's a commercial all these
14 things apply.

15 MR. CAMERON: Thank you. Thank you, Rex.

16 That's very helpful. I'm going to go to Tom first --
17 and question for both Tom and Marshall. Is this
18 concept of safeguards by design -- is that pretty much
19 front and center on the plate in terms of what to
20 consider going within this rulemaking or a companion
21 rulemaking? Tom?

22 MR. HILTZ: I'll share my understanding
23 and invite Tom to help clarify that. But just to
24 amplify I think our regulatory structure for
25 safeguards by design we have 10(c) of our Part 75

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1 which requires that if you're designated for
2 safeguards and selected by the IAEA for safeguards
3 that you comply with -- and you subject yourself to
4 safeguards.

5 I think we do not regulate safe by design.

6 It is in the applicant's best interest to look at
7 what safeguards requirements may be applied to that
8 facility and consider those in the design. But we do
9 not regulate safe by design. We just require that if
10 a facility selected currently that they subject
11 themselves to IAEA safeguards.

12 To support some of the interactions,
13 because it is an important issue for some of our
14 applicants, we do facilitate discussions with
15 Department of Energy who has the lead for safeguards
16 by design in some of the national labs I think are at
17 the forefront of considering new safeguards
18 techniques.

19 But we don't regulate or require a
20 safeguards by design, at least currently, and it is
21 not currently in the scope of the reprocessing
22 rulemaking that we are considering.

23 I guess I'll just conclude by saying there
24 are a lot of lessons learned out there associated with
25 safeguards at reprocessing facilities. There was a

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1 group formed that developed a guidance -- I think it's
2 called Last Car -- back in the late nineties. And
3 there is some more recent experience with designing
4 safeguards at the Rokkasho plant in Japan which we
5 have learned about.

6 But I hope that provides some clarity.
7 And if I said anything wrong I invite Tom to help out
8 and clarify.

9 MR. CAMERON: And one thing that I'd like
10 all of you to consider -- all of you from the NRC --
11 then we're going to go -- we'll go to Tom now, and
12 then Marshall is -- if it's -- if the applicant can
13 build in safeguards into its design -- it's their
14 option to do that then what does the NRC need to do to
15 be prepared to review that? In other words, what's
16 the NRC's role looking at the -- any safeguards that
17 have been built into the design? Tom?

18 MR. PHAM: To comment to Tom's comments
19 regarding Part 75 regulation, basically it's the U.S.
20 and the IAEA agreement. The -- one of the tricky
21 aspects of that Part 75 is -- Part 75 will go into
22 effect after the U.S. decides to put the facility on -
23 - we call it the IAEA eligible list. And if the IAEA
24 select that site Part 75 go into -- go in place.

25 But before that a facility -- a new

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1 facility -- they do not have to comply with Part 75
2 yet. So that's what I just want to clarify on that.

3 But in the meantime we become a little bit
4 more proactive to invite the facility to look into
5 that Part 75 implication or obligation in case they
6 are selected to become eligible facility. And through
7 that process we have -- we ask the facility to submit
8 to the NRC and to the IAEA -- we call design
9 information questionnaire.

10 So basically what is your safeguard plan
11 during your design phase -- during your plant
12 operation -- and that may impact and -- your
13 operation. So basically the retrofitting may be
14 expensive for you if you don't carefully design your
15 safeguard system for your future operation. So that's
16 just for clarification on that.

17 MR. CAMERON: Okay. Thank you, Tom.
18 Marshall, and then we'll go to Jim and then over to
19 Robert.

20 MR. KOHEN: I guess I would say from the
21 security side of the house one of the things that
22 we're trying to do with the security rulemaking is to
23 make the regulations more transparent.

24 And what I mean by that is we've had some
25 situations over the years where we've had to deal with

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1 facilities that have materials that don't necessarily
2 fit into the table per se. So there have had to have
3 been what we talked about yesterday regulation by
4 exception, and we'd rather not do that.

5 So what we're trying to do with this
6 comprehensive review is get in place a structure that
7 will allow current licensees, as well as applicants,
8 to understand what the regulations are and what the
9 requirements security wise are before they go ahead
10 and start building.

11 So from that aspect it is sort of security
12 by design is what we're going for. Are we requiring
13 it? No. But certainly we're trying to enable it by
14 making as much clarity in the regulation as possible
15 to allow facilities to say, Okay, what are the
16 security requirements for this type of facility with
17 this type of material so that they can build it into
18 their design or -- and not have to retrofit.

19 MR. CAMERON: Okay. And, Jim?

20 MR. BRESEE: Just as a reminder, I think I
21 had a chance to discuss this a bit in our previous
22 discussion in Rockville, but there is a rather large
23 combined Office of Nuclear Energy NNSA program
24 involved in safeguards which, of course, also is
25 applicable to security issues.

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1 And the bulk of this program is devoted to
2 advanced instrumentation which we hope would be of
3 sufficient interest to industry that at the time any
4 decision is made to build a reprocessing plant in the
5 U.S. these advanced technologies would be incorporated
6 just as a part of the overall process design.

7 Obviously accountability issues are very
8 closely related to process control and other aspects
9 of a separation system. So it is an evolving advanced
10 technology which I personally feel has great promise,
11 particularly when combined with advanced modeling
12 which has the capability in the long run of using a
13 popular term of the construction of a virtual plant --
14 that is, a plant which is so well described
15 mathematically that is essentially identical to the
16 physical plant.

17 And when you combine such modeling with
18 improved instrumentation there is at least the long-
19 term possibility of remote real time continuous
20 safeguards. And clearly this -- we're talking about
21 now is an aspect of safeguards by design -- that is,
22 an initial decision that the plant itself will contain
23 those specific items required to meet the requirements
24 of the license process.

25 MR. CAMERON: Thanks, Jim. And the

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1 virtual design will reveal what should be in the --

2 MR. BRESEE: [indiscernible]. And it --
3 likely that some of these advance concepts can be
4 tested in foreign facilities in the near term -- I'm
5 talking now over the next ten-year period.

6 MR. CAMERON: Thank you. Thank you very
7 much, Jim. Robert?

8 MR. HOGG: Yeah. I don't want to hog the
9 conversation today, but I do feel like --

10 MR. CAMERON: Is that a pun or what?

11 MR. HOGG: I do feel like [indiscernible]
12 has some experience here. We have been selected as
13 eligible facility for certain activities, and I've
14 personally run operations that have been subject to
15 the IAEA's additional protocol, and doing that
16 introduced significant activities and equipment and
17 conditions that if known ahead of time could have been
18 done substantially easier.

19 I recognize that it's a developing
20 concept. However, any guidance or thoughts prior to
21 or during the development of the technical basis or
22 following regulatory guidance would be just
23 tremendously helpful and serve the best interest of
24 safeguarding the material.

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

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1 Don, Beatrice, on this first question, any concerns
2 that you might want to express or any comments on the
3 whole idea about designing safeguards protection into
4 it up front?

5 MR. HANCOCK: Safeguards and security are
6 not my issues. I noted that Ed Lyman [phonetic]
7 especially and [indiscernible] had some conversations
8 at the Rockville meeting. But I don't have anything
9 really.

10 MR. CAMERON: Okay. All right. Anything
11 else on the first question? (No response.) How about
12 the mixed oxide fuel transportation? Oh, I'm sorry.
13 Rod.

14 MR. MCCULLUM: Yeah. And this is kind of
15 a general point. And security's not my area either,
16 so the specifics of, you know, what's being discussed
17 on safeguards by design I'm not going to weigh on.

18 But I heard a significant undertone here.
19 One of the things that is certainly my area as well
20 as the area of everybody that works at NEI is
21 regulatory predictability and stability.

22 To the extent that we have things still to
23 be learned -- things still being developed in the
24 international community we need to weigh in -- learn
25 from what we did in the world of reactors here as well

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1 and make some decisions. I would hate to -- you know,
2 again, this regulatory framework is going to be a key
3 input to the business decisions and the policy
4 decisions that would be made as to what we pursue in
5 the United States.

6 If security and safeguards is to be a
7 moving target, as it has been in some other areas,
8 that's not helpful. So -- and I think the time line
9 Marissa outlined earlier allows you the time to weigh
10 that stuff and to make the right decisions so that
11 when we do come up with a final rule here we know we
12 got security right and it's not going to be a moving
13 target.

14 MR. CAMERON: Okay. Thank you. Anything
15 on the mixed oxide fuel transportation requirements?
16 I think, Marshall, you spoke to that issue and what's
17 happening now.

18 Diversion path analysis -- could someone
19 explain what that means -- what is diversion path
20 analysis? Tom?

21 MR. PHAM: Back a couple of years ago when
22 we recommend -- when we propose the Part 74
23 [indiscernible] rulemaking to the Commission and to
24 that Circular OA0059 the Commission directed to staff
25 to consider one of the aspect -- the diversion path

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1 analysis requirement in the regulation.

2 Basically diversion path analysis is the
3 facility needs to look into their operations,
4 different processes, different activity in material
5 control and include physical protection to come up
6 with different pathway material can be diverted -- can
7 be through some abrupt loss or even protracted losses
8 through small quantity over the time.

9 So facility needs to come up with
10 different conceivable and credible scenarios for
11 material diversion. And based on that analysis they
12 can [indiscernible] the scenario by priorities. With
13 that analysis the facility should come up with
14 different [indiscernible] measure how to protect or to
15 compensate with those scenarios. So basically it's a
16 detailed analysis of diversion material and
17 countermeasures.

18 MR. CAMERON: Okay. Thanks, Tom. That's
19 a clear explanation of what it is and what the
20 licensee or license applicant might have to do. When
21 we talk in this bullet -- and this is not just for you
22 but for any of the NRC staff -- about issues or
23 alternatives that the NRC should consider for
24 establishing a diversion path analysis -- we just
25 heard Tom talk about what that means.

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1 Well, what issues or alternatives are
2 there in terms of the diversion path analysis? Maybe
3 what choices are there for the NRC to make in
4 regulating?

5 MR. PHAM: I want to add more that
6 currently there is no existing regulation for
7 diversion path analysis under Part 74. A proposal for
8 doing diversion path analysis may or may not create a
9 burden which should be imposed upon, you know,
10 [indiscernible], staff, or the facility to do that.
11 So that's why right now it's just a proposal. And we
12 would like to welcome any stakeholder or public
13 comment should we need to do that.

14 The advantage for that diversion path
15 analysis is to identify or mitigate potential
16 safeguard vulnerability at the facility and also the
17 system [indiscernible] of the whole facility. That's
18 the advantage. But the disadvantage is the cost, the
19 time -- do we need to do that or not.

20 MR. CAMERON: Okay. So that's the -- the
21 issue is whether to regulate that particular aspect of
22 it. And is it necessary, is it cost beneficial to do
23 that? To a lay person I think it probably sounds like
24 something that would make sense -- we should have
25 diversion path analysis required.

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1 Is there any perspectives on why it might
2 not be needed because there are existing protections
3 in the system? I don't know if any of the -- if the
4 industry has a view on this or Beatrice, Don, anybody
5 on this particular subject. I mean, is it something
6 that just greatly complicates -- it's extremely
7 complicated, extremely hard to use? (No response.)
8 Okay.

9 MR. PHAM: To me in the audience we --
10 people are [indiscernible] about giving comment or
11 suggestion for us regarding safeguards and security.
12 But we -- that's what the workshop is for, and if you
13 have any idea it just -- just give us a comment.

14 MR. CAMERON: Okay. So Tom has put that
15 on the table. We're going to go to Beatrice and we're
16 going to see if there are other views on diversion
17 path analysis requirements. Beatrice.

18 MS. BRAILSFORD: I do actually think that
19 the discussion at the Rockville meeting was very good.
20 So I will just note that, you know, one of the
21 problems with a reprocessing facility is that it does
22 make nuclear weapons material available. And I would
23 encourage NRC to take whatever steps it deems
24 appropriate to try to mitigate that inevitable effect
25 of nuclear weapons material availability.

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1 MR. CAMERON: Thank you, Beatrice.
2 Marissa.

3 MS. BAILEY: Yeah. I guess I don't want
4 to create controversy here. But it seems to me that
5 diversion path analysis would be consistent with a
6 risk informed performance based rule -- that it's
7 something that might be analogous or parallel to an
8 ISA but for material control and accounting.

9 MR. CAMERON: Okay. And --

10 MR. MCCULLUM: We'd agree with that, Chip.

11 MR. CAMERON: All right. And is this --
12 let me ask this question. Would this be an
13 appropriate subject that would be -- and this may go
14 to Robert's point. Would this be appropriate that you
15 would have a design criteria saying that the -- I
16 mean, the applicant should have a diversion path
17 analysis. I'm sort of fumbling around with this, but
18 maybe it ties into your idea about safeguards by
19 design. Robert?

20 MR. HOGG: Yeah. I guess in a sense any
21 way to help define the envelope, be it by boundary
22 condition criteria or analysis detail will help to
23 ensure that within the framework of what specifically
24 has to be done and what generally is expected -- we're
25 talking the same language.

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1 I mean, we know what to do on a case-by-
2 case basis. And we know what to expect currently on a
3 case-by-case basis. But we probably -- for the
4 benefit of those people who don't know and who are
5 observing and -- from a position of interest but no
6 knowledge want to understand what is being done for
7 this kind of facility and others.

8 We have a well-defined path forward. ISA
9 -- the equivalence of this kind of a requirement is
10 very consistent with a performance based type
11 approach, and I think that's a very astute point.
12 There are -- just as there are ways of doing safety
13 analysis probably ways of doing safeguards analysis.

14 And there are probably some very complex
15 ways of doing it and some fairly straightforward ways
16 of doing it. We would want to make sure that people
17 who don't necessarily have experience with the details
18 know what the expectations are both from the agency
19 and from an applicant.

20 MR. CAMERON: Thank you, Robert. And Rod,
21 and then we'll go to Tom. Rod?

22 MR. MCCULLUM: Yeah. I just wanted to
23 note, Chip, the way you described that design
24 criteria, particularly in light of the way Marissa
25 described it, is analogous to ISA. That was very

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1 technology neutral. A design criteria to perform the
2 analysis as opposed to, you know, looking at the
3 specific -- you know, and the rigor with which you do
4 that and the methodology and all that.

5 So I just wanted to compliment you for a
6 very technology neutral phrasing of that criteria.

7 MR. CAMERON: Yeah. I guess it's sinking
8 in. But thank you, Rod. Tom?

9 MR. PHAM: To comment more on Rod comment
10 regarding the diversion path analysis, in the past we
11 -- first of all the diversion path analysis is not
12 new. It just -- it's [indiscernible], it's a way the
13 DOE use that in the past, the NRC we use in the past,
14 the IAEA use that in the past.

15 Actually the IAEA conducted a lot of
16 diversion path analysis for repository. They have
17 different project on repository and they come up with
18 different diversion path analysis in the past.

19 Within the NRC back in the nineties we
20 start doing that. We used one of our high-risk
21 uranium facility to do that -- and very systematic.
22 And we work with the national [indiscernible] -- with
23 Los Alamos to do together with that particular
24 facility. And the results come out very nice. And
25 [indiscernible] -- that particular [indiscernible]

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1 they used that to [indiscernible] to strengthen their
2 -- save their program.

3 With regard to reprocessing right now in
4 the gap analysis we -- the staff -- we just propose
5 that diversion path analysis will be in the guidance
6 level -- guidance document level. So at least we can
7 give it to the public or the stakeholder some
8 guideline -- some guidance on how to do that.

9 The further staff to go into the
10 regulatory requirement -- that's what we -- because
11 our rulemaking is open. So that's why we want the
12 public to give us comment if that's -- every rule when
13 we propose -- subject to the public burden -- things
14 like that.

15 And, again, like Marissa mentioned
16 [indiscernible] -- should be comparable -- like in the
17 safety arena you come up with an ISA, we come up
18 different accident scenario. In material control and
19 accounting you come up with different scenario. You
20 may lose your material. And it should be neutral
21 depending on your facility -- depending on what type
22 material you may have at your facility.

23 If you have a lot of americium or
24 [indiscernible] your diversion path analysis will be
25 different. If you just have low-level of low enriched

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1 uranium your analysis should be different. So -- and
2 the material type --

3 MR. CAMERON: Okay. And, Tom, do you --
4 this last bullet on issues or approaches for material
5 accounting management, inventories, and holdup -- I
6 guess the diversion pathway would be a subset of -- is
7 it different? Can you sort of explain that to us and
8 see if there are any suggestions from around the table
9 on that last bullet?

10 MR. PHAM: I want to elaborate a little
11 bit on the -- the fourth -- the last bullet regarding
12 the material accounting management.

13 We believe that we need approaches to meet
14 the timeliness and the goal quantity for material
15 inventory accounting. And we need to evaluate that
16 for change or for improvement because [indiscernible]
17 reprocessing facility likely will have a lot
18 [indiscernible] -- material [indiscernible] through
19 the facility and inventories.

20 Because of [indiscernible] and inventory
21 we may need to look at that. Because right now under
22 our Category 1 regulation requirement we have a
23 [indiscernible] quantity limit and timeliness. And so
24 we need to reconsider that to see that if that's okay
25 or not.

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1 For example, during our visit to Rokkasho
2 facility in Japan the Japanese come up with -- discuss
3 with us regarding that quantity -- the limit. The
4 measurement uncertainty associated with inventory --
5 right now we have [indiscernible] limit in a number.

6 The international target value have a
7 different number and the Japanese they come up with
8 somewhere in between. And they -- the Japanese share
9 with us their experience. They say that they can do
10 that.

11 Our current limit may be a little bit
12 stringent. So those different things we like to have
13 people to have some idea to see that if it could be a
14 problem in the future if the facility come into the
15 operation that the timeliness and inventory counting -
16 - and, of course, like Jim mentioned earlier, that
17 [indiscernible] technology now like at the near real
18 time accounting -- that those things could be -- if
19 it's implemented at the facility could tremendously
20 solve those issues.

21 The other issue at the -- the holdup issue
22 -- material holdup -- the holdup issue -- it happened
23 to everywhere. Every facility always have material
24 holdup somewhere. So we need to come up some idea --
25 the facility need to come up with some idea how to

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1 minimize that and impact the material holdup to have a
2 better accurate inventory accounting.

3 And with the analysis we are now the
4 ongoing activity. Now we are advising a lot of our
5 regulatory guides [indiscernible] regarding to
6 physical protection in MC&A. And in those reg guides
7 we also talk about a different way to minimize the
8 holdup issue within different facility. And that's
9 all related to the item we need to ask for comment
10 regarding to the last bullet.

11 MR. CAMERON: Okay. Thanks, Tom, for
12 enumerating those issues. Robert, do you have some
13 ideas on this?

14 MR. HOGG: Yeah. I'm really glad that Tom
15 brought these issues up because they are the most
16 germane and most operationally consequential
17 conditions for the facility to consider.

18 It brings into play my favorite law, which
19 is the law of unintended consequences -- when one
20 wants to do something well one designs a process to do
21 that well and introduces other consequential
22 activities that have to be accounted for and conducted
23 for potentially in the vein of some other safety
24 security activity or even additional accounting type
25 activities. And please do listen to the input of the

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1 stakeholders with regard to these particular topics.

2 MR. CAMERON: Dan.

3 MR. STOUT: Kind of following on, as you
4 know, [indiscernible] utilized U.S. national
5 laboratory technology and investments worth many tens
6 of millions of dollars in their facility. You know,
7 it is what I would consider state of the art. And I
8 encourage you to continue to dialogue with the
9 Japanese and Rokkasho, as well as France and U.K.

10 And, you know, as you know, there's an
11 operational impact in unintended consequences of
12 administering that level of safeguards. And that's
13 better than talking to us. You know, that is the best
14 source of information on cost and unintended
15 consequence that you can get.

16 And, you know, I think Rokkasho is the
17 perfect example of probably the best that the United
18 States of America can do today. Japanese cooperated
19 and implemented, in cooperation with IAEA, and it
20 exists. It's in place and they're learning now if
21 they can comply, how they can comply, and what the
22 consequences are.

23 MR. CAMERON: Thanks, Dan. And, Rex, I
24 should just ask you, do you have anything on this?
25 Dan through U.K. into the mix. I don't know if you

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1 want to comment on this issue or not.

2 MR. STRONG: I think only to pick up on
3 the -- on this point about unintended consequences.
4 And without wishing to appear negative there just is
5 not doubt that as these plants become more
6 sophisticated in the sense of having more and
7 different monitoring systems and more and different
8 surveillance systems, some of which either are real
9 time or close to real time.

10 With that complication comes other things
11 which the operators have to get right. And ultimately
12 there is a balance. And I'll just say no more than
13 that -- there is a balance.

14 MR. CAMERON: Okay. Thanks. And Rex used
15 the term complications. And I think, Robert, that
16 obviously ties in with your concern about unintended
17 consequences. And, Dan, do you think that the NRC
18 from looking at the particular facility that you're
19 talking about we'll be able to get an idea of these
20 types of unintended consequences and complications and
21 where the balance is, as Rex put it?

22 MR. STOUT: Absolutely. You know, I just
23 encourage Tom to not just talk to your counter-part --
24 that this is a global issue with lots of disciplines
25 and -- you know, this is an area where the NRC is

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1 talking to the right people -- the right facility.

2 But you need to -- you can't look at
3 material control and accountability in a vacuum. You
4 have to address it more holistically to achieve that
5 balance. That's it.

6 MR. CAMERON: Thanks, Dan. Thank all of
7 you. It's time for us to talk with the public on
8 this. But is there any remaining safeguard security
9 issues? Marshall had mentioned the term
10 attractiveness and there was going to be a new box I
11 guess for that. Does anybody want to say anything
12 about the attractiveness issue in terms of this
13 particular rulemaking or related rulemaking? (No
14 response.)

15 Okay. Public, we had -- we've had a
16 discussion of the single step licensing and
17 safeguards. Mike, do you have anything to say on
18 either or both of those issues?

19 MR. EHINGER: Sorry, folks, it's me again.
20 I feel compelled to address the issue of safeguards
21 by design. And I feel that the NRC is not taking
22 credit for what they have.

23 You really have safeguards by design
24 because you require submittal of the fundamental
25 nuclear material control plan as part of the

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1 licensing. That forces the operator or the facility
2 people to give thought to safeguards all through their
3 design. So I really believe that you have an element
4 of safeguards by design.

5 Safeguards by design are three words that
6 are invented recently to cover what we're really
7 doing. And you're doing a very good job in that area.

8 Now, to address it from the IAEA
9 perspective. I feel compelled to say that there is a
10 gross misunderstanding of what IAEA safeguards is.
11 Because what you do at the facility level for
12 fundamental nuclear material control plan and for
13 domestic safeguards you report certain information to
14 the national system.

15 That gets forwarded to the IAEA. And IAEA
16 safeguards is only -- and this is the misunderstanding
17 -- the verification of what the facility operator says
18 and is reported through the state system.

19 Now, addressing safeguards by design at
20 the IAEA side -- they're not taking credit for what
21 they have. Tom mentioned the submittal of the design
22 information questionnaire. That's a very formal
23 process within the IAEA safeguards activities.

24 That follows or kicks off something called
25 negotiation of the facility attachment. That's a long

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1 period of negotiation between the IAEA and the
2 facility operator through the national system to set
3 up the equipment and the needs that will be used for
4 inspection for verification of the declarations.

5 That's independent equipment from the
6 operator. It's stuff that's used by the IAEA to
7 verify the declaration. That's a long process that --
8 it's a formal process that goes through the whole
9 construction period.

10 The example of [indiscernible] -- that
11 took place over something like 12 years. And that
12 process of negotiation of facility attachment results
13 in a published facility attachment at the end of it.
14 And it kicks off the preparation of what's called the
15 safeguards approach. And that's done by the IAEA.
16 And that's where they say how they're going to use the
17 equipment that was installed and negotiated through
18 the facility at that --

19 So they have a formal safeguards by design
20 process that was exercised well and performed well
21 through the whole period of the safeguards project at
22 [indiscernible].

23 So, again, it's something that's talked
24 about and they want to formalize it into something
25 called safeguards by design. But the process is there

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1 -- it just needs to be formalized. And it works
2 fairly well.

3 So I think both sides are not taking
4 credit for what they have in place already. And I
5 think there's a misunderstanding of how IAEA's
6 safeguards works.

7 It all falls down in the case of the U.S.
8 The facility attachment process -- the safeguards --
9 the whole safeguards by design process worked very
10 well at [indiscernible] because [indiscernible] is a
11 non-weapons state and is subject to [indiscernible]
12 CIRC 153.

13 The U.S., as we heard today, is slightly
14 different as a weapons state subject to
15 [indiscernible] CIRC 66 type agreement. And that
16 involves this process of offering facilities for
17 selection and then selection.

18 So we tend to lose sight of the whole
19 process of safeguards by design in the U.S. because we
20 don't have that formal process. We don't put the
21 facility on the eligibility list, and the IAEA doesn't
22 select it. In weapons -- in non-weapons states it's
23 automatic and the process occurs.

24 So we have the problem in the U.S. of
25 establishing a dialogue that is in place for

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1 safeguards by design with the IAEA, but we don't do
2 it. And the IAEA isn't interested in spending their
3 resources and their money to -- it was very costly to
4 implement safeguards at [indiscernible]. And the IAEA
5 doesn't have the money. The U.S. has to decide if
6 they're going to make -- or essentially force
7 safeguards by the IAEA on a facility like a
8 reprocessing plant in this country and formalize that
9 approach.

10 Robert talked very well about the issue of
11 being selected. And then all of a sudden they show up
12 and they have to bring new equipment because there was
13 no negotiation. And it's a function of being a
14 weapons state and under [indiscernible] CIRC 66 type
15 agreement.

16 So the process is there. The NRC has a
17 very good safeguards by design process. The IAEA has
18 a very good safeguards by design process. But the
19 issue to be dealt with is how it's going to be
20 implemented in U.S. facilities. I'm sorry to take up
21 your time with this stuff.

22 MR. CAMERON: No, Mike, don't be. Don't
23 be sorry. We appreciate what you've been saying.
24 Okay? So thank you. Anybody else? (No response.)
25 Okay. Rex.

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1 MR. STRONG: Just to comment on that last
2 comment if I may. U.K., of course, is also a weapons
3 state and has therefore had to address this issue by
4 being very clear about the facilities that will be
5 entirely within international safeguards and those
6 that will not. And having made that decision all the
7 rest can then follow.

8 MR. CAMERON: Thank you, Rex. And I see
9 Marshall is nodding his head affirmatively on that.
10 Okay. It's Mike again.

11 MR. EHINGER: If you'll give me one more
12 minute it's a very important point. France and the
13 U.K. are weapons states. However, you heard Rex say
14 that they're subject to IAEA -- or [indiscernible]
15 safeguards. That's an activity within the European
16 states.

17 I -- they are subject to some IAEA -- a
18 very limited IAEA inspection. IAEA generally accepts
19 the conclusions of [indiscernible] for safeguards
20 implementation. However, they do inspection because
21 both of those facilities, Thorpe and COGEMA, due
22 process for foreign countries, i.e. Japan. So they do
23 inspect in the pool area and the storage area because
24 it's materials that belonged to a non-weapons state.
25 But they don't inspect in the facility itself, and

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1 that's a very important point.

2 MR. CAMERON: Okay. Thank you. Are we
3 going to swat the tennis ball anymore? No? Okay.
4 Well, good. Good discussion and I hope that Tom and
5 Marshall may have gotten some material for thinking
6 about how to proceed.

7 We have the very important issue of waste
8 management coming up at one o'clock. And that's when
9 we will be joined by the NRC staff person who will be
10 teeing it up for us, Mike Lee.

11 We also are going to have two members of
12 our panel who will have to leave, Jim Bresee and Dan
13 Stout. And I just want to express all of our
14 appreciation to you both for being here.

15 And I wondered if you -- the two issues
16 that we have -- waste management and environmental
17 protection this afternoon -- I just wanted to give you
18 an opportunity if you had anything that you wanted to
19 say about either of those issues. I'll put them in
20 the parking lot and we'll throw that into the mix this
21 afternoon. And I'm not saying that you need to, but I
22 just wanted to give you the opportunity if you wanted
23 to just flag an important issue. It's totally up to
24 you.

25 MR. BRESEE: One of the things that has

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1 been emphasized in the Blue Ribbon Commission
2 discussions of reprocessing -- and there's been a lot
3 -- I'm sure you're familiar with it. A very good
4 public record is available. In fact, one can go back
5 and actually be a witness of the -- to the actual
6 presentation.

7 A good deal has been said, and rightfully
8 so, about the additional waste management issues
9 associated with reprocessing as contrasted with the
10 ones for refuel cycle. And I just wanted to make the
11 point that it's being taken very seriously within the
12 Office of Nuclear Energy now.

13 We have an office devoted to storage and
14 disposal. It contains a sizable fraction of the
15 Office of Civilian Radioactive Waste Management staff.

16 Therefore, we're not losing all of the wonderful
17 background accumulated over the life of the Echo
18 Mountain Project. The head of that office, Bill
19 Boyle, is based in Las Vegas and a fairly large number
20 of the staff members in that office are in Las Vegas.

21 We have a sizable systems engineering
22 study, and a good deal of that effort is devoted to
23 trying as best we can to project using the most
24 advanced technology currently known -- the quantities
25 and characteristics of various waste streams

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1 associated with advanced fuel cycles.

2 It is certainly of common interest that
3 the United States do an improved job of characterizing
4 the various waste associated with reprocessing so that
5 we can ultimately end up with a safe and secure system
6 from the standpoint of public exposure and
7 environmental -- potential environmental damage.

8 I will make one additional comment on the
9 environment protection issue. I mentioned this in
10 Rockville -- I'll repeat it here. A good deal of our
11 current interest is on improved methods for handling
12 radioactive off gas. We're fully aware of the fact
13 that we will -- that any advanced separations facility
14 in the U.S. will probably have as one of its
15 requirements the capture and effective management of
16 radioactive iodine. So probably the largest single
17 effort that we have right now from an advanced
18 technology standpoint is in that area.

19 But we're also conscious of the fact that
20 the EPA is reconsidering some of the issues associated
21 with radioactive gas release, and, in particular, the
22 uncertainties surrounding krypton are significant.
23 I'm sure our NRC colleagues are aware of that
24 particular issue.

25 But I reported recently in a weekly report

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1 within [indiscernible] that was much encouraged by
2 some recent experimental data that I'll mention which
3 I think offers the possibility of new approaches to
4 off gas containment.

5 In a recent study using a copper based
6 metal organic framework structure experimentally there
7 was quantitative separation of krypton from xenon.
8 This is only a single experiment, and we're going to
9 be doing a lot more work in that area.

10 But it's attractive in that it suggests
11 the possibility of improved economics in the
12 separation of those two materials. And since there's
13 ten times as much xenon as krypton in nuclear waste
14 and xenon is non-radioactive and has commercial value
15 that the net consequences may have some impact on
16 overall economics of separation plants.

17 MR. CAMERON: Thank you. Thank you very
18 much for that, Jim. And we'll put both of those
19 issues -- better job of characterizing waste from
20 reprocessing and the off gas issue in the parking lot
21 and we'll see how that plays out in those discussions.

22 Dan?

23 MR. STOUT: I'll start out at a really
24 high level and then burrow in. But a lot of folks
25 have said what's TVA doing in a room and why do we

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1 have an interest. You know, we're a utility. The
2 fact of the matter is we're very committed to nuclear
3 energy. And we have six operating reactors, we're
4 building one, we're looking at -- we're in the process
5 of developing another at the [indiscernible] site.
6 We're looking at small modular reactors. We're
7 looking at way to diversify our fuel supply options
8 with MOX, et cetera.

9 And it's in that context -- a commitment
10 to less coal, more nuclear -- and we're not unique.
11 Other utilities in this country are also very
12 committed to nuclear energy. They're just figuring
13 out ways to get going on it.

14 And that's a different paradigm. By the
15 time a recycling facility will be operational in this
16 country there's going to likely be 100,000 metric tons
17 of used nuclear fuel. If we build a reprocessing
18 facility the size of those that have been built
19 recently in U.K., Japan, France -- you're looking at
20 800 metric tons -- you're still only one-third of the
21 rate of generation in the United States. So that --
22 it's going to be decades before we're managing used
23 nuclear fuel at the rate we're generating it.

24 It's in that context that TVA believes
25 that recycling makes sense -- that used fuel is an

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1 asset -- it is a resource. It ought not to be
2 disposed. So, now, why do you do recycling? There's
3 two reasons. One is to get to more efficient
4 utilization of the resource. You're making more fuel.

5 The other is to package the waste in a way that's
6 better for disposal.

7 Now, used fuel going to Yucca Mountain was
8 retrievable. It's monitored retrievable storage in a
9 very secure way. And that makes sense in a
10 [indiscernible] cycle with 104 reactors that are going
11 to end their useful life and no new nuclear plants.
12 That makes no sense.

13 If we're in a growth scenario perhaps
14 there are other options. And so what does a utility
15 want? Utility wants options for used fuel management.

16 Yucca Mountain's defensible. Technically it makes
17 sense. Yeah, we'd like to see that as an option. But
18 we'd also like to see recycling.

19 So in terms of enabling recycling to
20 happen in the United States rulemaking is one of the
21 necessary dominoes. Before you can build a plant you
22 need to know what the rules are. Once you know the
23 rules you can design the facility, then you know the
24 cost of it, and then you can formulate the business
25 case.

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1 Now, I understand it's iterative -- that
2 the NRC needs to understand the designs to come up
3 with the rules. There's an iterative process there.
4 The point is you've got to have rulemaking, then
5 you'll have designs, then you'll have cost estimate,
6 then you'll build your business case, and then you'll
7 see construction.

8 And so we encourage the NRC to continue
9 down this path to complete the rulemaking. And I
10 think that there is going to be a side benefit of you
11 being much better informed and able to respond to the
12 Blue Ribbon Commission and help them understand the
13 issues associated with recycling and help and form
14 policy for this country.

15 And I totally agree with Jim. You know,
16 we need to keep doing the R&D. We need to keep coming
17 up with ways to better perform material control and
18 accountability, to reduce emissions. And that's not
19 inconsistent with what we've seen taking place in
20 France and in the U.K. If you look at the emissions
21 the trend is impressive. It's orders of magnitude
22 reduction. And that's normal process. You improve
23 your processes.

24 And so from a utility perspective I'd like
25 to see us start with what can be done today and

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1 continue to make improvements. And starting with
2 what's available today doesn't preclude future
3 options. So we'd like to see aqueous reprocessing
4 facilities. We'd like to see electrochemical
5 reprocessing facilities. We'd like to see fast
6 reactors some day. We ought to get on putting
7 the rules in place to enable that system to be put in
8 place. Thanks.

9 MR. CAMERON: Okay. Thank you, Dan. And
10 thank you, Dan and Jim, again for being here and --
11 are you going to leave? No, I'm teasing. I'm
12 teasing. I just want to say that the agenda item that
13 we don't have on the agenda is that everybody will get
14 an opportunity at the end to make the type of comment
15 that Dan has made too.

16 So, go ahead, Mike.

17 MR. EHINGER: One parting shot to support
18 what Dan and Jim said. Dan put his finger on a very
19 important point about the fuel and fuel generation and
20 how long it's around.

21 And the U.S. is in a very, very unique
22 position that if we build a reprocessing plant in the
23 next 20, 30, 40 years it will be able to process fuel
24 that is more than 50 -- almost 100 years old. And
25 when it's that old most of the bad stuff has decayed

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1 away.

2 And so it will be much easier to handle
3 from the waste point that Jim is making mention of,
4 and it's going to be a much different plant than what
5 we see around the rest of the world. And the U.S. is
6 in a very unique position to be able to do that with
7 the old fuel that we have.

8 MR. CAMERON: Thanks, Mike. And the
9 reason I added that in about the opportunity to make
10 any closing statements about the process or whatever -
11 - because I think that I anticipate there might be
12 different views than what we've just heard. So I want
13 everybody to have a chance to express that.

14 And, with that, I think we're at the lunch
15 break, which is scheduled for an hour-and-a-half. And
16 it essentially has to be because of the fact that we
17 need our staff person to tee it up -- waste
18 management.

19 But we'll have a full discussion of waste
20 management. We'll have a focused discussion on
21 environmental protection. And then we'll go around
22 the table to see if -- what everybody has to say in
23 closing. And that will be that.

24 So thank you. We'll be back at one.

25 (Whereupon, at 11:30 a.m., the meeting

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1 adjourned to reconvene at 1:00 p.m.)

2

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

1:07 p.m.

1
2
3 MR. CAMERON: Okay. Welcome back
4 everybody. And we're going to get started with the
5 waste management issues relevant to reprocessing
6 rulemaking. And we have Mike Lee from NRC
7 headquarters. Mike -- FSME -- right? That's the
8 correct office? Well, I was just going to ask you.
9 So, Marissa, I guess you're the only one. You get the
10 prize. You were reading it. Okay.

11 Mike is going to tee that up for us. And
12 there's some questions that -- at the end relevant to
13 high-level waste [indiscernible], low-level waste. So
14 -- and wherever else that all of you want to go with
15 it.

16 Mike, are you ready to start us off?

17 MR. LEE: [indiscernible].

18 MR. CAMERON: Well, none of the rest of us
19 will be here but you certainly can.

20 MS. BRAILSFORD: Chip, are there any
21 copies of his presentation?

22 MR. CAMERON: I'm sorry. Beatrice?

23 MS. BRAILSFORD: Are there any copies of
24 his presentation handouts?

25 MR. CAMERON: Jeannette, do you think we

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1 can get some hard copies at least for Beatrice and
2 Anne of the Mike Lee presentation? Okay? We'll get
3 them, Beatrice. All right. Mike? Oh, let me tell
4 you -- this is sort of -- this is awkward for a
5 presentation because what you have to do with this is
6 hold it down the whole time. Okay? So either you can
7 come up here or I can give you this --

8 MR. LEE: I'll go up there.

9 MR. CAMERON: Okay. All right.

10 MR. LEE: Okay. Thank you, Chip. I think
11 if I'm not mistaken probably over the last day or so
12 there's been a lot of conversation about the
13 reprocessing effort, of course, and, in particular,
14 the staff's desire to go about this process in a way
15 that's as neutral as it can be in terms of not
16 favoring a particular technology.

17 But the -- regardless of whatever
18 technology is used in reprocessing if we ever get to a
19 state where we have an operating facility there's
20 going to be waste streams associated with that
21 technology. So I'd like to talk a little bit about
22 the waste side of reprocessing in terms of what the
23 staff's thinking is right now, vis a vis the
24 regulatory analysis that was done -- the Gaps. So hit
25 the next button.

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1 The first couple of slides are intended to
2 be nothing more than some context for how we go about
3 looking at the waste issues. PUREX I'm presuming has
4 been talked a little bit about over the last day-and-
5 a-half or so. The -- introducing PUREX at this point
6 is only intended again to give you some context to
7 think about a process and what waste streams might be
8 associated with that process.

9 So the takeaway from this slide is that
10 you're going to have waste streams. The waste streams
11 are going to need an appropriate disposition that
12 ensures adequate public health and safety. I'll just
13 move to the next slide.

14 This cartoon is intended to kind of
15 capture conceptually what might be considered to be
16 through puts with a typical type of PUREX facility.
17 Alex Murray, who isn't here today, put this together.

18 It's intended to be more conceptual. But the points
19 that I want to acknowledge in this slide -- or what
20 the three streams that you see I the lower right-hand
21 corner -- or quadrant.

22 If you consider the PUREX process there's
23 the expectation that you're going to generate some
24 type of waste which is currently or conventionally
25 referred to as high-level waste. You may also have a

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1 waste that's possibly high-level waste -- or GTCC like
2 greater than Class C as well as what you might
3 recognize or consider to be low-level waste. And this
4 is kind of forming the basis for the regulatory Gaps
5 that we're interested in on the waste side of the
6 program.

7 MALE VOICE: Mike, what was TE in that
8 graph? Go back. High-level waste 50 TE.

9 MR. LEE: Is that ton equivalent?

10 MR. CAMERON: We need to get all this on
11 the record.

12 MALE VOICE: Yeah, I had my button on. I
13 was asking -- the notation TE apparently is ton
14 equivalent, which I guess makes sense.

15 MR. LEE: I believe we're seeing Alex's
16 English prejudice here to use the European system --
17 or the convention. So the TE is in reference to ton
18 equivalence. And I guess that's -- is that T-O-O-N-E-
19 S? I see -- okay. I see on nod. So I'll take that
20 as I got it right.

21 MS. REED: Yeah, it's a metric ton.

22 MR. LEE: Okay. Metric ton. Thank you.
23 All right. So having captured the flow chart mind
24 there's the expectation that you're going to have one
25 waste stream that could be considered to be high-level

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1 waste. And that waste stream is highly radioactive.
2 It's -- if you follow the Nuclear Waste Policy Act
3 it's the type of waste that would go into a geologic
4 repository.

5 You're also going to have some non-high-
6 level waste -- and we'll talk more about these
7 definitions in a minute -- that is also very highly
8 radioactive. But there's different disposition path
9 other than deep geologic disposal.

10 The system that's currently been placed in
11 the United States relies essentially on
12 characterization by origin rather than hazard. I
13 think if you go to the IAEA system that's described in
14 Geologic Safety Guide 1 -- I think it was published in
15 2008 or 2009 -- they have a slightly different way of
16 categorizing the waste streams. The U.S. historically
17 has gone about it a little differently.

18 The -- turning now to high-level waste
19 there's a number of regulatory references, if you
20 will, that provide a definition for what it is.
21 Definition in 63.2 is in reference to the site
22 specific Yucca Mountain standards. And that
23 definition is also repeated in Section 72.2 of NRC's
24 regulations. It also includes besides the liquid
25 waste, if you will, irradiated spent fuel and other

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1 highly radioactive material that determines -- needs
2 disposition in a -- through geologic isolation.

3 And the expectation is that regardless of
4 whatever reprocessing technology is arrived at in the
5 context of the regulation there's going to be some
6 high-level waste that comes out of that waste -- that
7 process.

8 And turning to the PUREX -- again, just as
9 an example -- these are the examples of the types of
10 high-level waste streams that can be expected from
11 that process. And, again, if folks need this for --
12 copies of these slides we can make arrangements to get
13 them.

14 I was asked to put in a cartoon of what
15 some of the disposition paths for some of the high-
16 level waste looks like right now. So here's the
17 cartoon to make this talk a little more interesting.

18 Other materials that may come out of the
19 recycling -- or, excuse me -- the reprocessing cycle,
20 if you will, could be uranium, plutonium, volatile
21 materials, other materials that are associated with
22 the chemical engineering aspects, if you will, of
23 reprocessing.

24 There's also going to be some non-high-
25 level waste. And this is typically what we refer to

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1 as commercial low-level waste. It's currently managed
2 under 10 CFR Part 61, which is the Commission's low-
3 level waste disposal regulation. It includes some
4 material that's slightly irradiated, personal
5 protection equipment, and other materials -- ion
6 exchange media -- things like that.

7 Referring back to the European system, they --
8 if you go back to that IAEA guide I made reference to
9 there's further refinement in the definition of those
10 waste class -- of the low-level waste class. They
11 provide a little more detail in how that waste stream
12 is going to be managed.

13 So turning to the regulatory gap analysis
14 that was completed a few years back, there are three
15 gaps that are particularly important to the area of
16 waste management. One is Gap 3 which is what are --
17 what waste might be incidental to reprocessing. And
18 it's been treated as a high priority gap.

19 Gap 15, which I'm not going to talk about
20 today, is analogous somewhat to the waste confidence
21 decision that exists for nuclear power reactors.

22 And Gap 16 is the waste classification
23 scheme. After you've identified what waste streams
24 might be associated with the reprocessing technology
25 how do you intend on dispositioning them, if you will.

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1 And that's the intent of Gap 16.

2 Turning to Gap 3, for those of you that
3 might be familiar with the DOE program, there's a --
4 there already exists a definition of waste in the
5 sense -- incidental to reprocessing. That waste
6 stream is possibly similar to what we might expect to
7 be associated with a commercial reprocessing facility.

8 So -- but the difference between
9 commercial waste incidental reprocessing and the
10 defense waste incidental reprocessing, if you will, is
11 that the commercial site isn't currently defined.

12 And if you go back to the existing suite of
13 radioactive waste classifications, if you will, that
14 exists out there we have high-level waste, which is
15 defined in statute as well as in regulation. That
16 includes spent nuclear fuel. There's a discrete
17 definition for true waste, which are managed by the
18 Department of Energy. Low-level waste, of course, is
19 managed by NRC. And greater than Class C waste, which
20 I guess you might -- it could be argued is somewhat
21 equivalent to the DOE true waste but on the commercial
22 side.

23 And as -- if you go to the NRC website in
24 the -- there's a list of publications that are
25 electronically available. And some of the history on

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1 the evolution of these definitions is found in
2 Appendix B of Nureg 1853, which is I think the history
3 of low-level waste regulation within the NRC. But
4 there's an appendix that describes how these
5 definitions came about because low-level waste, for
6 example, is kind of a -- is defined by what it not is
7 as opposed to these other definitions are very
8 specific to what the waste form is.

9 Gap 3 -- Gap 16 was concerned about what
10 type of -- how to define what the waste stream it.
11 Should it be low-level waste, greater than Class C, or
12 high-level waste? Gap 3 is more concerned with after
13 you've come up with a definition -- what might it's
14 disposition be.

15 And if you look at the various waste
16 classification schemes under the first tick you see
17 high-level waste spent fuel true and greater than
18 Class C, at least domestically by convention is
19 envisioned for some kind of geologic isolation.

20 By regulation low-level waste is deemed
21 suitable for near-surface disposal in shallow land
22 disposal scenarios that rely on some limited
23 engineering. And if you look at the DOE program right
24 now it's been determined that DOE can dispose of those
25 wastes in situ through grouting and the use of some

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1 other limited engineering measures.

2 So the question that this -- the Gap team,
3 if you will, is interested in is for a commercial
4 reprocessing facility. What should we propose for the
5 disposition of weir type -- or weir like wastes,
6 recognizing that not all waste streams are going to be
7 high-level waste and that you're likely to have large
8 volumes of waste streams that might be more similar to
9 what is currently managed under a Part 61 type of
10 regulation.

11 So in terms of some potential options --
12 and that's one of the things that we're hoping to hear
13 from the public about -- is there's different ways of
14 -- or at least in regulatory space assigning a home
15 for some of these waste streams.

16 We -- as I've already pointed out that
17 there's current definitions in place based on statute
18 and regulation. And one of the things that I haven't
19 talked about is that independent of the processing
20 effort the staff have been tasked by the Commission to
21 exam approaches to a wholesale revision of Part 61 --
22 that it was recognized recently in light of issues
23 related to the disposition of depleted uranium that
24 some questions have come up about the flexibility of
25 the regulation to handle new and emerging waste

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1 streams. Reprocessing, of course, would be one of
2 those waste streams potentially.

3 So at the end of the calendar year we have
4 a paper due to the Commission that examines some
5 proposals that would address how we might revise and
6 possibly improve the low-level waste framework to deal
7 with new and emerging waste streams.

8 Gap 16, as I mentioned before, gets back
9 to how are you going to specifically treat weir-like
10 wastes. By default if you turn to NRC's low-level
11 waste regulation there's some waste classification
12 tables in Section 61.55. For those of you who aren't
13 familiar with those tables in too much detail the
14 history behind the development of those tables is that
15 when the regulation was first put together the staff
16 surveyed waste generators at the time as part of the
17 NEPA process and determine that there were
18 approximately 32 waste streams that were out there in
19 the commercial environment that might be suitable for
20 disposition under the Commission's low-level waste
21 regulation.

22 After evaluating those waste streams it
23 was determined there were about 24 radionuclides of
24 interest that needed to be evaluated. And through a
25 series of analyses that are described in the draft

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1 environmental impact statement it was determined
2 essentially that there were 12 radionuclides that
3 were, if you will, kind of influencing what doses
4 could be to potential receptors. And those, depending
5 on concentrations and half lifes, they've been divided
6 into the class on tables 1 and tables 2.

7 The issue is that if you look at any
8 particular reprocessing stream you're likely to
9 identify radionuclides that weren't considered as part
10 of the earlier NEPA analysis. So the question is do
11 we go ahead and rely on the existing Part 61
12 methodology, if you will, to classify them as default
13 Class A or is there merit in going back and revisiting
14 the regulation in total and developing a new
15 classifications scheme within the regulatory framework
16 itself.

17 So -- I think this is my last slide. To
18 kind of sum up things I guess the questions that we
19 would like to hear from the public about is what
20 alternatives or options should NRC consider for the
21 independent storage of reprocessing high-level waste.

22 Are there alternatives or options which NRC should
23 consider for the management of the non-high-level
24 waste reprocessing stream?

25 When you look at the storage of

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1 reprocessing waste is there some time limit that's
2 appropriate to consider? In the past in reactor -- in
3 the reactor program the Commission has expressed a
4 preference for how long you can store waste on site
5 before you move it to some kind of disposition path.

6 The next thing is should the waste
7 incidental to reprocessing concept be implemented for
8 a commercial fuel production facility as it currently
9 is under the DOE program -- because that's a scenario
10 for which the staff has some experience right now.

11 And then, lastly, what specific
12 performance assessment requirements should be
13 considered as part of any reprocessing regulatory
14 framework.

15 So thank you for your slides and we'll try
16 to answer questions and engage constructively.

17 MR. CAMERON: Great. And, Mike, just so
18 you can relax, I think you probably can --

19 MR. LEE: Oh, okay.

20 MR. CAMERON: You can go and use your --

21 MR. LEE: I better turn this over.

22 MR. CAMERON: -- microphone.

23 MR. LEE: The button.

24 MR. CAMERON: Okay. Before we get into
25 any of these questions -- and I think there might be

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1 some clarifications needed on what some of these
2 questions mean. But are there questions for Mike on
3 his presentation before we get into discussion of some
4 of these issues? And, James?

5 MR. ROSS: You know, Mike, to me this
6 waste management issue seems to more of a political
7 issue than anything else. Has the NRC been working
8 with the BRC any? Have you interacted any with them?
9 Did you talk to them at all about some of the
10 information you put on your slides?

11 MR. LEE: Lawrence Kokajko's in the
12 audience and I think he can raise his hand because the
13 -- but for everyone's benefit the BRC is the Blue
14 Ribbon Commission that's been tasked by the President
15 to look at I believe the entire fuel cycle -- nuclear
16 fuel cycle. It's my understanding though that most of
17 those discussions have been in the context of spent
18 nuclear fuel and high-level waste.

19 The short answer is -- at least in the
20 low-level waste area I'm not aware of anything, but I
21 welcome any friendly amendments from Lawrence.

22 MR. CAMERON: Before we go to Lawrence
23 though, James, what -- when you say this is a
24 political issue what do you -- do you mean policy? Or
25 what do you mean --

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1 MR. REED: Policy [indiscernible].

2 MR. CAMERON: Policy issue. Okay.

3 MR. REED: The questions we're asked to
4 discuss are what alternatives and options should the
5 NRC consider in the storage or high-level waste.

6 MR. CAMERON: So your view is that perhaps
7 some of these are policy issues that are going to be
8 addressed outside of the NRC. Okay. And let's all
9 remember to do those buttons. Let's hear from
10 Lawrence Kokajko. Lawrence?

11 MR. KOKAJKO: Thank you. In fact, the NRC
12 has had several discussions with the BRC in public
13 forum. Most recently Tim McCartin of my staff
14 addressed that as a panelist there. And, in fact, I
15 understand that the chairman is soon to be meeting
16 with the co-chairs of the BRC.

17 The -- we have monitored every session of
18 the BRC, including the subcommittees, which, as you
19 may know, is, you know, looking at reactors, fuel
20 cycle, and, of course, waste and reprocessing.

21 So those things we have been monitoring.
22 When we've been asked to participate we have done so.

23 And we have also engaged with the BRC staff on a
24 number of issues on how best to convey a regulatory
25 perspective, but also to give some insights into the

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1 current programs and the like.

2 We, too, are waiting for the BRC draft
3 report, which is maybe due out as early as July of
4 next year -- and it could be even earlier I understand
5 -- and, of course, the final report, which is due out
6 in January 2012.

7 MR. CAMERON: But in the meantime -- there
8 was a suggestion on James' part that the NRC doesn't
9 need to worry about addressing these until they see
10 what comes out of the Blue Ribbon Commission. I think
11 that -- I think the answer would be is that the NRC is
12 still going to go ahead and try to address these
13 issues. Lawrence?

14 MR. KOKAJKO: We quite frankly feel that
15 we need to be prepared for whatever eventuality comes
16 to pass. We don't want to be caught short if all a
17 sudden the BRC is thinking about doing something else
18 and we've not prepared adequately for it.

19 We have -- in fact, my division has
20 prepared itself to look at the integrated strategy
21 which the NRC published earlier this year and taken a
22 look at whatever waste forms and waste media that it
23 would be disposed in. So we believe that we will be
24 staged for whatever the BRC comes out with and
25 whatever the evolving national policy comes to pass.

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1 MR. CAMERON: Okay. Let's go to Rod and
2 then Mike. And then let's go to Don.

3 MR. MCCULLUM: Yeah, I'm glad James asked
4 that question because I was sitting here staring at
5 these first two questions thinking that perhaps they
6 represent a bridge too far in terms of what it is that
7 NRC does. NRC regulates safety.

8 And I guess I'll introduce here similar to
9 the technology neutral term that we've been talking
10 about -- and that's policy neutral. What NRC needs to
11 do is address the classification of these wastes --
12 these waste forms in a manner that best serves public
13 health and safety.

14 As far as them, you know, meeting those
15 requirements here are some policy decisions that may
16 be up to the licensees, that may be up to the policy
17 makers, it may be influenced by the Blue Ribbon
18 Commission recommendations.

19 One guiding principle I think that should
20 be in this when you think about, okay, how do we do a
21 policy neutral regulation here -- and I'm going back
22 to -- for those who came in late in this movie we
23 heard some pretty heartfelt expressions from the
24 activists towards that end of the table -- not you,
25 Robert, you know who I'm talking about -- who --

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1 regarding the -- I would call the materials still
2 stranded at past reprocessing sites.

3 And one of the things that cause that --
4 West Valley was mentioned, for example. One of the
5 things that cause that to happen is the unavailability
6 of geologic disposal. So to the extent that -- you
7 know, in the first question it really isn't up for NRC
8 to consider the alternatives in terms of where we're
9 going to store these things. But to the extent that
10 materials don't need to be disposed of in geologic --
11 in deep geologic disposal classifying them accordingly
12 and providing for that classification allows the
13 materials to be appropriately disposed of --
14 dispositioned -- and allows some of those sites to be
15 cleaned up.

16 And we all know that with decisions --
17 policy decisions that are not safety decisions that
18 have recently been made the geologic disposal is much
19 further in the future than we might have thought five
20 years ago.

21 So I think it's sound regulatory judgment
22 to really ask that question of if a waste form doesn't
23 require geologic disposal do we provide a
24 classification framework that allows another
25 disposition path that will protect public health and

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1 safety. And then, you know, it's up to the applicants
2 to determine what they would do with those wastes to
3 meet those requirements.

4 MR. CAMERON: Okay. And we're going to go
5 to Mike. But I want to check in with all of you on
6 what Rod has just said also -- get some reaction to
7 that and from the NRC. What do you read -- what are
8 the implications do you read for the NRC regulatory
9 program -- do you read into the remarks that Rod just
10 made. And let me go to Mike and let's hear from Wendy
11 before we go over to Don and Beatrice. Mike?

12 MR. LEE: I don't want to get on the soft
13 ice yet, but I would expect this part of the NEPA
14 evaluation that the staff would conduct is part of the
15 development of its regulation. There's going to be
16 some discussion as to the waste streams and how those
17 waste streams are managed and approaches to the
18 management of those waste streams from the practical
19 standpoint as well as an environmental perspective.

20 So I don't have the answer right now as to
21 what that determination would be because the NEPA
22 process would have to go through its cycle -- it would
23 have to reach fruition. But I don't think that
24 decision's been made a priority at this time, but I
25 would expect that there would be some discussion of

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1 that issue in the context of any NEPA review.

2 MR. CAMERON: Okay. And thanks, Mike.
3 And I hope you're here for -- with us for the rest of
4 the afternoon. Our next agenda item that Miriam is
5 going to facilitate on environmental protection we're
6 going to try to spend some time focusing on what the
7 scope and nature of any NEPA statement on this
8 rulemaking should be. So thank you for that. And,
9 Wendy?

10 MS. REED: Yeah. I just wanted to give a
11 -- I guess a clarification of the first question. The
12 basis of this question is that right now high-level
13 waste is regulated by the NRC I believe under Part 72.

14 But for a commercial facility -- if I have
15 this right, then a commercial facility could only
16 store spent nuclear fuel. High-level waste from
17 reprocessing I believe would currently be stored at a
18 monitored retrieval storage, which is run by the DOE.

19 And so regardless of when a geological
20 repository comes into play I would think that a
21 commercial reprocessing facility would need to store
22 high-level waste for some period of time. And I think
23 that's where that question comes from.

24 Also there's the Appendix F in Part 50
25 which stipulates times that high-level waste can be

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1 stored in a commercial facility. I think -- and right
2 now it says liquid waste is five years and then
3 solidified high-level waste is ten years, and then it
4 has to be shipped to a repository. There are some
5 things that need to be addressed.

6 MR. CAMERON: Okay. So that you're saying
7 there is some -- there are some requirements now.

8 MS. REED: Yes. Gap 2 addresses the
9 situation with storage of high-level waste.

10 MR. CAMERON: Okay. Thanks, Wendy. And I
11 think we'll probably --

12 MS. BRAILSFORD: Wendy, could you just
13 repeat the very last part of your statement about the
14 five and ten years? I missed some nouns.

15 MS. REED: There's Appendix F in Part 50
16 which relates to reprocessing. And I believe, if I
17 have this correctly, it stipulates some times for
18 storage of high-level waste.

19 MR. CAMERON: Okay. Appendix F, Part 50.
20 Since I want to get all the NRC staff statements out
21 before we go to Don to Beatrice and Jim -- so, Marissa
22 --

23 MS. BAILEY: Yeah, just a clarification
24 that Wendy made. Interim storage of high-level waste
25 and spent nuclear fuel is regulated by NRC under 10

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1 CFR Part 72. And for the storage of high-level waste
2 right now the way Part 72 is written it has to be
3 stored under monitored retrieval storage, which is
4 what would be run by the Department of Energy. So DOE
5 would be the licensee.

6 And I think the question here that's being
7 asked really is what alternatives should NRC consider
8 when it comes to interim storage of high-level waste.

9 Is that correct?

10 MR. CAMERON: Okay. So good clarification
11 -- interim storage. Don, there's been a number of
12 things said and you've had your card up for a while.
13 Go ahead.

14 MR. HANCOCK: Well, I guess one of the
15 things that's been a little surprising to me on
16 virtually everything we've been talking about for the
17 last two days industry has pretty clear-cut ideas. So
18 I'm a little surprised that the industry folks don't
19 have suggestion or suggestions about the first
20 question. Okay. Good. So I'll -- that was going to
21 be my question -- who's going to speak to that. So we
22 know who that's going to be. So that's good.

23 And the second question the same way.
24 Currently industry does have specific plans. All the
25 non-high-level waste that industry has they have plans

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1 for. Low-level waste they have very specific and
2 requirements for.

3 So I guess my first question is why --
4 from an industry standpoint why are the wastes from
5 hypothetical future reprocessing considered so
6 differently than existing industry wastes in terms of
7 how you would deal with them. And then related to
8 that, of course, is NRC has gotten a lot of guidance
9 from industry about other issues, so I would presume
10 that NRC would be interested in some industry guidance
11 in terms -- seems to me a reason for the questions --
12 what is industry thinking -- what are its plans in
13 that regard.

14 Let me just say before whoever wants to
15 respond to that the third question relates to time
16 limit considerations. I think one of the things
17 that's important is that clearly -- and, you know,
18 government lack of fulfilling its requirements or
19 whatever -- clearly time frames for storage of the
20 designs -- the original designs of existing power
21 plants assumed shorter time frames, design necessity,
22 storage necessity -- on site for considerably shorter
23 time frames than what's been shown to be true.

24 And I would think that for both industry
25 and NRC in the case of reprocessing facilities they

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1 need to take that lesson learned into account and have
2 clear discussions in any licensing -- in the rules
3 first and in any licensing applications about
4 potentially decades-long periods for storage, either
5 on site or some place else.

6 That clearly needs to be required and, I
7 mean, my point is to not repeat the mistakes that
8 we've seen for the last several decades.

9 MR. CAMERON: Okay. Good. Thank you,
10 Don. And after we hear from Beatrice we're going to
11 go to Jim Lieberman to address those questions.
12 Beatrice?

13 MS. BRAILSFORD: I was just, like Don, and
14 I think probably the NRC folks as well, confused why
15 NRC -- why anyone was uncomfortable with the notice
16 that NRC has a role to play in the storage of nuclear
17 waste.

18 I hope as we go through this list we get
19 to talk more about some of these other bullet points.

20 But I will note that the reprocessing sites with
21 which I am most familiar are not commercial -- they
22 are Department of Energy. And they will be
23 contaminated until the end of time regardless of what
24 disposal option is chosen for [indiscernible].

25 And reprocessing has contaminated crucial

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1 water resources in this country. And I know you're
2 going to say you did it better -- you're going to do
3 it better. But you -- we must not dismiss and say if
4 we could get this spent fuel off those sites or the
5 high-level waste and glass form off those sites they
6 would be clean. They will never be clean.

7 MR. CAMERON: Okay. And, Rod, did you
8 want to respond to what --

9 MR. MCCULLUM: Yeah. I'm not actually
10 going to counter that because she is correct that
11 those were not commercial sites. And what we're
12 talking about here is how we would regulate future
13 commercial sites. And for me to promise that, you
14 know, we'll do it better -- well, of course, we will,
15 but I don't think that's going to be satisfying
16 either.

17 What we're talking about here is how we
18 put in place a regulatory framework that will require
19 it be different at future commercial reprocessing
20 sites. And I'm going to let the expert talk about
21 some of our visions for these materials.

22 But for high-level waste we right now have
23 a regulatory framework which is problematic, as
24 Marissa has pointed out, because it's forcing it to an
25 MRS and forcing it to geologic disposal. We have a

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1 lot of materials that aren't high-level waste where
2 perhaps they also would be headed for geologic
3 disposal because of where they came from.

4 We need a regulatory framework that allows
5 us to appropriately dispose of all these materials in
6 the most expeditious manner possible so that we don't
7 with a future commercial site end up in the place that
8 I think Beatrice is talking about from some of the
9 past sites.

10 So, with that, I'll go to Jim and I think
11 he'll talk about the vision that industry has laid out
12 for these materials.

13 MR. CAMERON: Okay. And before we get to
14 Jim I need to ask Rod a question because I'm worried
15 around that maybe all of us are misconstruing
16 something that you said earlier in light of what you
17 said now. But, Mike, do you have a --

18 MR. LEE: Just a quick point about
19 storage. There's an effort underway right now being
20 led by Jim [indiscernible] of the NRC staff and
21 [indiscernible] that's looking at all guidance related
22 to the storage of radioactive waste. And I know they
23 have a placeholder in that effort to look at
24 reprocessing waste.

25 But the issue that is recognized and has

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1 come up in terms of storage plans at nuclear power
2 plants as well. So I know that they're -- Jim's group
3 is to get back to the Commission ultimately with some
4 observations and advice on how that guidance might be
5 amended to kind of deal with the real world as opposed
6 to what hypothetically was least thought to be the
7 practice at the time or --

8 MR. CAMERON: Okay. Another moving part.

9 Thank you. Rod, to paraphrase Beatrice -- she -- I
10 think she was asking you -- I don't know why you, Rod,
11 think that the NRC shouldn't have some role -- action
12 to take in terms of this --

13 MS. BRAILSFORD: Why were the first two
14 bullets --

15 MR. MCCULLUM: I'm agreeing with her.

16 MS. BRAILSFORD: -- [indiscernible].

17 MR. MCCULLUM: I -- that's why the first -
18 - my reaction was the same as James to the first two
19 bullets. It is not NRC's job to make policy
20 decisions. It is for them to put in place a
21 regulatory framework which -- I'll use the term again
22 policy neutral -- will allow policy decisions to be
23 made and implemented -- most importantly, implemented
24 -- in a way that will protect public health and
25 safety. They can't be lined to policy, so what Lauren

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1 said about their relationship with the Blue Ribbon
2 Commission is important.

3 But looking at the hazards of these wastes
4 -- and I think it's an absolute given -- and it's not
5 a policy call because any policy that we make
6 geological disposal is a way off. So it's a given
7 input here that geologic disposal is in the distant
8 future.

9 So, therefore, looking at classifications
10 and storage requirements -- for example, storage under
11 Part 72 -- we're going to be looking at longer-term
12 storage of spent nuclear fuel. It would seem to me
13 that the reprocessed high-level waste forms should be
14 as robust for long-term storage as well. And, again,
15 the key is those things that are high-level waste --
16 giving a classification to them that will allow them
17 to be dispositioned in a way that is doable and will
18 help sites from becoming from contaminated -- because
19 sites become contaminated when materials are just left
20 there, not properly tended to, and have no disposition
21 path.

22 But, with that, I really would like to
23 drive the discussion back to Jim who can talk with a
24 little more authority as to how we've tried to provide
25 our input on such a classification scheme.

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1 MR. CAMERON: And I think that perhaps the
2 best solution -- or resolution here to some confusion
3 perhaps is to key on the fact that you talk to the
4 need for an effective NRC regulatory framework for
5 managing these wastes. And I think that's what Jim is
6 going to talk about.

7 MR. MCCULLUM: Yeah. Remember what we
8 said at the outset -- this regulation is an input to
9 policy making decisions. So -- and that's vitally
10 important. The policy makers need to be well
11 informed, and that's why this is important.

12 MR. CAMERON: Go ahead. Go ahead,
13 Marissa.

14 MS. BAILEY: Yeah, before we go to Jim, I
15 think I want to agree. The intent of these two
16 questions were not to get into policy decisions that
17 is not in the NRC's purview. What we're trying to get
18 into with these two questions is exactly what you just
19 said -- what are the types of regulations that we
20 should be considering, if any, that would address the
21 interim storage of waste that's associated with
22 reprocessing, whether it's high-level waste or low-
23 level waste.

24 MR. CAMERON: Okay. All right.

25 MS. BAILEY: Not to get into the policy

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1 decision of what we ultimately do.

2 MR. CAMERON: Yeah. I don't think that we
3 wanted to get into those policy decisions. But I
4 think that the way I understood your first comment --
5 and I think the way Beatrice might have understood it
6 -- is that the NRC shouldn't be worried about what the
7 regulatory framework is for the interim storage. And
8 I -- that's not what you said.

9 MR. MCCULLUM: Yeah. My position and
10 Beatrice's position and Marissa's position are all
11 three -- we're in violent agreement on that.

12 MR. CAMERON: Okay. Well, I'm not going
13 to argue with that. And, Jim, you know, these
14 questions -- when you -- I just want to before you
15 start -- is that I hope that it's clear. We have
16 these bullet questions, and sometimes they drive us in
17 ways that we shouldn't be driven. And I worry about
18 that with some of these questions.

19 So that as you're talking about this, if
20 you could provide any reference about how that ties
21 into these that might be helpful to all of us -- or
22 whether they don't tie it.

23 Because this is the discussion that's
24 important. And I don't want us to go places where it
25 doesn't make sense to go just because of the bullets

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1 up there. Okay?

2 MR. LIEBERMAN: Okay. Well, a number of
3 items to discuss here. First, with Beatrice's point
4 about issues other than high-level waste, I think we
5 were all aware of the issues of West Valley and the
6 issues of the various DOE facilities in that complex -
7 - of cleaning up the facilities.

8 Since West Valley was licensed the NRC has
9 issued a regulation -- 20.1406 I believe is the
10 regulation -- that requires as part of the licensing
11 process to consider decommissioning.

12 So in our proposal -- and I'm sure NRC
13 would require it even if it wasn't in the proposal --
14 as part of the application to get a license to build a
15 facility you have to include how you're going to
16 decommission the facility. So at the very front end
17 you're thinking about the ease of decommissioning --
18 or how to facilitate decommissioning as you design the
19 facility initially. So that's a major difference from
20 the way facilities were designed and licensed in the
21 past. So that's one thing that we've built in here.

22 To pick up item 1, the alternatives -- the
23 NEI proposal for NRC consideration provides for
24 several options. An applicant could come in and seek
25 their license -- just a recycling facility --

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1 processing facility for the separation. Or they can
2 include as a part of that application fuel
3 fabrication, fuel storage -- various other things that
4 would be associated with a recycling facility.

5 If that was the case you could do it all
6 under what we call proposed 7X because we've taken in
7 developing 7X the regulations for Part 72 that
8 addresses storage and the other provisions in the
9 regulations. Or you could come in and seek a separate
10 license to license the storage facility separately
11 under Part 72 -- license the fabrication facility
12 separately under Part 70 and do each portion of the
13 facility as a separate license.

14 So I would think that is important to have
15 the regulatory framework allow for the flexibility to
16 include all these separate items into one licensing
17 situation so you can consider all the interactions for
18 the different facilities on each other to make sure
19 you have a good safety understanding of the facility.

20 The second one -- well, let me answer a
21 question about Appendix F. Appendix F has a five-year
22 provision for converting the liquid waste to solidify
23 or [indiscernible] the waste. That regulation's never
24 been applied because that was not applicable to West
25 Valley.

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1 Our proposal adopts that five-year period
2 to provide for solidification within five years and
3 then placing it into a container that meets the
4 requirements of Part 71 so it's ready to be shipped
5 off site. I think any entity building a reprocessing
6 facility would desire the high-level waste to be
7 removed as soon as feasible from the site. There's no
8 desire to store it any longer than necessary.
9 Obviously that gets into policy issues of where you're
10 going to put it.

11 So the canister to contain the solidified
12 high-level waste has to be sufficient to store it for
13 as longest time as considered reasonable for whenever
14 we're going to have a geologic disposal.

15 I think the next issue really is what is
16 high-level waste and what is this waste incidental to
17 reprocessing. And Mike said that unlike DOE we don't
18 have regulations or statutes. Even in DOE the law
19 provides for a definition of waste incidental to
20 reprocessing only for Savannah River in Idaho. For
21 Hanford there's not statutory basis for waste
22 incidental to reprocessing, and they're using a DOE
23 Order 435.1.

24 At West Valley, which is under NRC
25 jurisdiction, NRC issued a policy statement back in I

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1 think 2002 that provides a standard for waste
2 incidental to reprocessing.

3 All these standards are kind of
4 consistent. And what they do is they look at high-
5 level waste. The definition of high-level waste in
6 the Nuclear Waste Policy Act is a highly radioactive
7 material from reprocessing and a whole lot of other
8 stuff.

9 But the issue is what is a highly
10 radioactive material? The highly radioactive material
11 in our view -- and what NRC has taken the view in the
12 past and DOE has taken the view in the past -- is not
13 the material -- let me say again -- high-level waste -
14 - or highly radioactive is that waste that needs a
15 permanent isolation. So what is not highly
16 radioactive is that material that can be disposed of
17 in near-surface disposal.

18 Now, what is that can be disposed of in
19 near-surface disposal? That is the material that if
20 disposed of in near-surface disposal can meet the
21 performance objectives of Part 61. So it meets the
22 standards of low-level waste. And you determine that
23 by doing a site specific performance assessment for
24 the particular site.

25 Now, there are issues in Part 61 that Mike

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1 referred to that NRC's looking at -- and one of the
2 issues is the classification scheme. The
3 classification scheme has some weaknesses because the
4 waste streams that were considered when Part 61 was
5 adopted in 1982 or that time frame are different from
6 the waste streams that we're seeing today.

7 The classification scheme of Part 61 was
8 based on generic site and they applied the performance
9 objectives to that generic site to come up with the
10 concentrations for the classification.

11 I think -- I guess I'm speaking more for
12 myself, but I think [indiscernible] 7X too is that the
13 classification scheme is almost irrelevant. What's
14 really important is the site specific performance
15 assessment for the given site and whether it meets the
16 performance objectives of Part 61. If you do then you
17 have safe disposal. If you don't then it's not
18 acceptable.

19 Okay. So what we propose is you look at
20 the waste streams, and if the waste streams can either
21 meet the current definition of Class C or below it
22 would be low-level waste. Or if it can't meet the
23 definition of Class C then you have to do a site
24 specific performance assessment to demonstrate that
25 you meet the performance objectives.

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1 And in that way you're assured that the
2 waste can be properly treated as low-level waste and
3 it's protected. And that's consistent with the
4 statute Congress passed for Savannah River in Idaho
5 and it's consistent with the NRC policy statement for
6 West Valley and it's consistent what DOE's doing in
7 their order.

8 In fact, DOE is re-looking at their order.

9 In fact, next week I'm going to a meeting with DOE
10 and trying to marry NRC's practices and their
11 practices and trying to come up with a federal
12 standard for what is waste incidental to reprocessing.

13 And then that can be considered by NRC as they go
14 through the framework.

15 I don't know if I've covered the issues or
16 the questions.

17 MR. CAMERON: Well, and I didn't want to
18 necessarily drive you into those bullets if that
19 wasn't the right way for you to explain what the --
20 what regulatory scheme you propose for -- or any I
21 proposed that's in 7X for the management of waste from
22 reprocessing.

23 I think that we've gotten an idea from
24 you. I think you answered Don's question about does
25 the industry have any thoughts on this. And I guess

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1 the question is what the people think about some of
2 the things that Jim has talked about, and does the NRC
3 think that the 7X proposal, for example, touches all
4 the bases that need to be touched -- perhaps not in
5 the correct way, but are they dealing with all the
6 issues that the NRC thinks needs to be dealt with in
7 this reprocessing rule.

8 And I think that's what we need to
9 discuss. Let's see what Anne has to say and then Don.

10 And then, Mike, let's go to you and get your reaction
11 to what Jim has said and let's see if we can build
12 from that. Anne?

13 MS. CLARK: Well, at the risk of sounding
14 very ignorant I will give my impression of what is
15 being discussed. And -- well, first of all, from my
16 perspective it appears to me that all waste,
17 regardless of the method of generation -- and that's
18 with the caveat that [indiscernible] has special
19 rules. But that aside, regardless of the method of
20 generation should be classified and regulated in the
21 same manner. Why does it matter if it comes from a
22 reprocessing plant versus a nuclear power plant if it
23 meets the same content criteria basically?

24 And it sounds to me like that the issue at
25 hand is more about how do you deal with the waste

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1 while it's on site. And I'm guessing -- and correct
2 me if I'm wrong -- that that is because on site
3 situations are going to be different in nuclear power
4 plants than they are going to be in reprocessing
5 plants, and so you'll have different co-risks
6 coinciding with the risk of having the -- that's
7 redundant. You have different risks coinciding with
8 the risks that are created by the waste management and
9 waste storage issues. Is that correct?

10 And I have one last question. So these
11 are sort of more questions than anything. And that is
12 it baffles my mind why in the U.S. we classify waste -
13 - radioactive waste the way we do. And it seems to be
14 mostly based on our history of weapons creation.

15 And, yet, in Europe they have low-level,
16 medium-level, and high-level waste and they give it a
17 nice -- you know, an easy to understand definition for
18 those of us who are not technical people. And so
19 early in this day -- or yesterday actually we were
20 talking about technology neutral regulation, and that
21 appears to me the way to have a technology neutral
22 regulation in this particular context.

23 The way we classify waste right now by
24 saying that low-level waste is everything that's not
25 one of these other categories is absurd because that

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1 is totally not technology neutral. As soon as we come
2 up with a new waste issue that is as dangerous as
3 high-level waste but it's never been classified as
4 high-level waste so it's not high-level waste it
5 automatically goes into low-level waste by the current
6 system. This does not make sense.

7 MR. CAMERON: I think you're raising good
8 points. And I want to go to Jim to talk to all three
9 of those points because I saw you nodding
10 affirmatively on all waste should be treated the same,
11 the second one we're basically talking about on site,
12 and then the absurdity I'll use -- and you can use
13 that word if you want.

14 MR. LIEBERMAN: Well, I was going to say,
15 Anne, you're preaching to the [indiscernible]. The --
16 we have a crazy quilt regulation in the United States
17 that's based on the statutes.

18 These statutes were written in different
19 times by different Congresses and they don't play
20 together. In fact, the 1980 Low-Level Waste Policy
21 Act has one definition of low-level waste, and the
22 1985 amendment has a different definition of low-level
23 waste, and Part 61, which is the NRC regulation for
24 low-level waste, has the 1980 definition, not the 1985
25 definition.

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1 I can give you two beakers of Cs-137 --
2 exactly the same concentration, same material -- and
3 one beaker is high-level waste and one beaker is low-
4 level waste because the way it was formulated -- the
5 source.

6 So there's a real problem here. And what
7 we're trying to do with these definitions of waste
8 incidental to reprocessing is to try to put it on a
9 risk based system to bring it into a common standard
10 of these performance objectives of Part 61 and try to
11 make sense out of a difficult system that we're faced
12 with from a legal point of view.

13 There was a lawsuit that DOE was involved
14 with in I think like 2004 time frame and Congress had
15 to get involved. It just is a truly regulatory mess.

16 As to the question about reactors versus
17 reprocessing, the waste forms are different. And one
18 of the issues with reprocessing over the years is DOE
19 stored the liquid waste in these tanks for a long time
20 past the design life and they had to replace the
21 tanks.

22 And a big benefit of this Appendix F is to
23 require the liquid waste to be solidified in a
24 relatively short time period so you don't have the
25 residues being built up in the tanks and all the

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1 problems associated with the current DOE conflicts.

2 MS. CLARK: So from -- it really isn't
3 about how the waste was generated. It's more what
4 form the waste takes after it's generated. So it
5 seems to me that the regulations -- you know, what
6 form is it take -- not after it's -- as it's being
7 generated -- how does it become whatever it is,
8 whether it's liquid or solid basically. Those are the
9 two big distinctions.

10 So it seems to me that regulations could
11 be based on the characteristics of the waste as
12 opposed to whether they were waste generated in
13 reprocessing or waste generated in nuclear power
14 plants.

15 MR. CAMERON: And, Jim, comment on that
16 before we go on.

17 MR. LIEBERMAN: That's where we want to
18 get to. But the problem is the statute has a specific
19 definition of high-level waste that puts the source
20 into it and not the risk. Now, accessible approach
21 would be disposing the waste based on its risks and
22 hazards.

23 MR. CAMERON: Okay. Mike, let me -- I
24 wanted you to react, and also Wendy and others, to
25 things that are being said around the table. And I

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1 wanted to get that on before you talk. But why don't
2 you -- you had an issue for a while, so just go ahead.

3 And you've got to do the button.

4 MR. LEE: I can't find fault in Jim's
5 analysis of the history. Let me stipulate that as
6 always. But, nevertheless, the regulatory -- the
7 definitions have evolved over time with and without
8 Congressional involvement. It's -- on face value it's
9 not a very simple problem to try to address. The
10 system is what it is. There are a number of
11 constituency groups that are caught up in a particular
12 definition. So when you begin to do some -- or if you
13 were to attempt to do some fine tuning here and there
14 might be some institutional resistance.

15 The one point that I was -- I wanted to
16 make in rebuttal to Jim's thoughtful remarks is that
17 what the staff is attempting to do as part of this
18 rulemaking effort is to think proactively on the types
19 of ways to manage these wastes rather than going back
20 and retroactively examining what could be done to fix
21 a problem that wasn't contemplated.

22 The DOE Policy Act -- all these things are
23 after the fact. The DOE Order 435.1 is only about ten
24 or eleven years old if I'm not mistaken. These -- the
25 Hanford tanks go back to World War II.

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1 So what -- as kind of a segue into what
2 Rod mentioned earlier what we're trying to do is think
3 ahead intelligently on ways -- and to pick up on one
4 of Jim's points is to consistent with the Commission's
5 1995 PRA policy statement think of effective and
6 efficient ways of managing these materials before the
7 fact rather than after the fact.

8 MR. CAMERON: Okay. And, Don, then we'll
9 go to Rex.

10 MR. HANCOCK: So I guess I just want to
11 clarify to see if I correctly heard a couple of things
12 that Jim said. You -- the NEI proposal -- or what
13 you're proposal would -- could include -- would allow
14 for what otherwise would be multiple licenses in the
15 reprocessing facility license -- in other words, in
16 addition to a reprocessing license what otherwise
17 would be required for waste storage and different
18 kinds, et cetera. So rather than having multiple
19 licenses for the same site facility you would -- my
20 word -- you would create a mega-license that included
21 multiple factors. Is that correct?

22 MR. LIEBERMAN: Correct. That's an
23 option.

24 MR. HANCOCK: Okay. And it would seem to
25 be that -- I mean, we get -- we may get back into our

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1 one step versus two step licensing problem here, but
2 conceptually I think that's exactly correct.

3 And part of what I was intending in my
4 earlier comment is by having too many things at some
5 reactor licensing not included in the license to me
6 that's created problems. And so I wouldn't want to
7 see that happening with a reprocessing facility.

8 I guess I am -- I do want to -- I was
9 going to say the same thing you said and -- about weir
10 because it was a -- my view at the time was it was a
11 bad decision by Congress at the time to, you know, do
12 it to apply to two sites and not to others. That made
13 no sense, but it was a political compromise decision
14 that Congress made.

15 I guess I don't really understand why
16 adopting a new version of weir for a reprocessing
17 facility gets you any place. If we're waiting -- if
18 we would be waiting -- which my understanding is the
19 industry doesn't want to do -- if we were waiting for
20 this reclassification -- revision of reclassification
21 to go through and then say, okay, what does that --
22 what are the kinds of waste that would come out of the
23 reprocessing under the revised classifications -- that
24 would be one thing.

25 But it seems to me that where we have

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1 classifications -- and as Mike's presentation showed -
2 - for much of the waste coming out of a default PUREX
3 processing plant we already have classifications for
4 them. And there are -- there is a regulatory
5 framework already in place, so why do we need another
6 regulatory framework when we have one.

7 But I guess I'm particularly interested in
8 from a weir -- why weir is the correct way or if you
9 have a different concept in terms of the overall
10 reclassification that you'd be looking for.

11 MR. CAMERON: And, Jim, could we not lose
12 -- this is important for you to have this discussion
13 on this because I think this could clear some things
14 up. But could I get Rex on before we do that? Rex,
15 your point.

16 MR. STRONG: Yes, thank you. I'm
17 [indiscernible] slightly interrupt the nice bit of
18 flow. But just to go back to waste categorization and
19 then ongoing management.

20 I think there are some differences in
21 categorization between one country in Europe and the
22 next, so I'm not going to try to represent the whole
23 Europe. But certainly as far as the U.K. is concerned
24 we have three categories.

25 We have a low-level waste category, which

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1 is defined as waste which are compatible with disposal
2 criteria for a near-surface disposal facility, which
3 itself has to meet pre-determined performance
4 criteria. So that's much like yours.

5 We also have a high-level waste category.

6 And that's actually different from yours. We will
7 define high-level waste as those which are
8 sufficiently radioactive to be self-heating where the
9 self-heating characteristics then becomes an important
10 point for operational management. And at the time
11 that definition was created the focus was on
12 operational management and was not on issues to do
13 with long-term disposal. That consideration came much
14 later.

15 So we have at the bottom end of the scale
16 one definition. At the top end we have a different
17 one. And everything else fits in the middle and
18 that's called intermediate-level waste. And our
19 definitions are, as you would have gathered, dependent
20 on the characteristics of the waste and not of the
21 technology which generated the waste. So that's that
22 point.

23 Just moving on now to how reprocessing
24 wastes are managed operationally. And that is that
25 probably 15 years or thereabouts there's basically

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1 been a policy position which says that waste arising
2 from reprocessing shall be treated or processed as
3 they arise.

4 So if that's materials which ultimately
5 are to be stored, say, because they're intermediate-
6 level waste then they shall be processed in whatever
7 way has been kind of predetermined such that those
8 wastes can be kept in what we would describe is a
9 [indiscernible] safe solid form.

10 And the context for that is about 20 years
11 ago the U.K. decided -- wanted a deep geological
12 facility. And operational wastes ultimately destined
13 for that facility were produced to a specification
14 that at least in principle would allow that disposal.

15 So logically consistent so far, and about ten years
16 ago that policy position collapsed and we're not in
17 the position where in effect that policy's been
18 reinvented.

19 So now the U.K.'s clear it wants deep
20 geological disposal following a protracted period of
21 above-ground interim safe, secure, environmental
22 responsible storage. And that protracted period could
23 be 100 years or thereabouts. We have already got
24 waste which has been in store for getting on for 30
25 years, so 100 years is not out of the way.

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1 MR. CAMERON: Okay. Thank you, Rex.
2 That's the model in the U.K. and sort of resonates
3 with what Anne was saying. And now back to Don and
4 Jim.

5 MR. LIEBERMAN: Okay. We are not
6 interested in developing a new classification scheme.

7 So to the extent waste is able to be classified under
8 the existing Part 61 scheme then we would do that.

9 The issue with Part 61 is the existing
10 scheme -- existing classification system sufficient.
11 And that's what NRC is looking at. And, in fact,
12 today was the time I heard of Part -- that
13 consideration for re-looking at Part 61 of putting
14 weir into Part 61. That's an interesting idea.

15 It's important to have a definition for
16 weir in a regulatory basis because there's a legal
17 cloud over the whole concept of weir. I mentioned
18 that court case. Some people don't interpret the
19 definition of high-level waste as I described it as
20 NRC and DOE has been interpreting it since 1969.

21 And until we get resolution on this either
22 through Congress or through the courts there's going
23 to be this cloud over it. And someone who's going to
24 be investing in a reprocessing facility that's going
25 to create these waste streams need to know in advance

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1 how their waste will need to be treated.

2 So we need clarity over these definitions.

3 And whether you put it in Part -- in the reprocessing
4 regulation or you put it in Part 61 or wherever it
5 gets in the regulation that could be challenged by the
6 courts and resolved so we know whether this concept
7 which has been for, you know, almost 40 years is a
8 valid concept will be helpful for everybody.

9 MR. CAMERON: When you talk about this
10 concept what are you referring to?

11 MR. LIEBERMAN: The weir concept.

12 MR. CAMERON: The weir concept.

13 MR. LIEBERMAN: Whether there's a portion
14 that came from a source from a reprocessing facility -
15 - can some of that not be treated as high-level waste
16 based on the risk and characteristics of the waste.

17 MR. CAMERON: So, in other words, it would
18 be treated according to the performance objectives of
19 Part 61.

20 MR. LIEBERMAN: Yes.

21 MR. CAMERON: Okay. Rod?

22 MR. MCCULLUM: Yeah. I think for the
23 record it ought to be noted that Jim just answered the
24 question in bullet number 4 yes.

25 But I wanted to get back to Don's

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1 question, which was what does this get you. And I
2 think this goes into -- I think this is a classic --
3 maybe one of the best examples we have of why it is
4 important to have the regulatory framework in place
5 early before you start to have applicants coming
6 forward and designing facilities and applying for
7 licenses and policy decisions being made around that.

8 Because if you have in place a logical,
9 consistent, comprehensive framework for classifying
10 these wastes -- and by consistent I mean consistent
11 with how we would deal with the exact same amount of
12 [indiscernible] from some other activity. You then
13 have the ability to evaluate your technology to really
14 look at what the costs and trade-offs would be.

15 You can perhaps tailor your technology
16 knowing that that regulatory framework is sound, and I
17 would hope you would tailor it to be as safe as
18 possible -- as, you know, resistant to the types of
19 contamination problems that perhaps we've heard about
20 before.

21 So having this in place in a regulatory
22 framework will, in fact, inform, whether it's Sven and
23 his privately-financed reprocessing facility or
24 whether it's Dan and, you know, his two step
25 developmental facility -- but whatever it is we need

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1 that kind of certainty before we can -- you really
2 can't go forward with that sort of uncertainty out
3 there. And I think NRC is on a path to resolve that
4 and would encourage that path to continue to be
5 followed.

6 MR. CAMERON: Okay. Thanks, Rod, for
7 tying us back into that. Let's hear from the NRC and
8 then go to Beatrice and Don. Let's hear from Phil and
9 then we'll go over to Tom -- Tom Hiltz. Phil?

10 MR. REED: Okay. Let me weigh in with my
11 thoughts on a couple of points that were made. This
12 term origin based is unfortunately something that has
13 been in the regulations and in the legislation. It is
14 the basis for the high-level waste. It's not based on
15 any type of analysis.

16 But that doesn't mean that that is not
17 correct. It means it does serve a useful purpose
18 particularly with the highly radioactive material.
19 Certainly the definition of high-level waste can be
20 modified or expanded to make things a little bit more
21 clear.

22 With regard to this weir I think that Jim
23 expressed it very well. Certainly it is a historical
24 concept. It's sort of like a disconnect from today.
25 That language needs to be cleared up because clearly

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1 if we had a reprocessing operating today and it
2 generates waste that would meet the requirements of
3 Part 61 chances are it probably would go to either
4 Barnwell or the low-level waste site out at
5 [indiscernible].

6 But something has to be done to take care
7 of this language. It's not an impairment I don't
8 think to the actual operation. The Part 61
9 requirements, remember, were derived from intruder
10 base. They are based on 500 milligram. We are
11 actually now thinking of going more to a performance
12 base, but that is still being talked about -- being
13 proposed. It's not yet a fact.

14 The real big issue that we run into in
15 low-level waste is if reprocessing generates
16 radionuclides and those radionuclides are not listed
17 in tables 1 and 2 of Part 61 then for all practical
18 purposes they become Class A and then you can dispose
19 of an infinity number of curies.

20 And I think the two examples that were
21 presented was krypton 85, which is not listed in. And
22 [indiscernible] is an exception. It's only related to
23 Class B and C.

24 But those are the things that really worry
25 people. And we have a fairly good idea of what waste

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1 will be presented, at least from some of the
2 proprietary information that is available from some of
3 the commercial facilities. The staff at this point
4 just has not had time to go through and sort that out,
5 but we certainly plan to do that.

6 Both AREVA and some other people have made
7 some -- some other companies have made presentations -
8 - Nuclear Waste Technical Review Board, National
9 Academy of Sciences, BRC -- in which they have
10 actually laid out in principle what their low-level
11 would be and what their high-level waste would be.

12 So I guess the message is, yes, we need to
13 clear up this language. But I don't think it's going
14 to prevent an actual reprocessing plant from disposing
15 of waste under Part 61. And the other issue is, of
16 course, the classifications.

17 MR. CAMERON: Thanks, Phil. And I guess
18 that prompts a question in my mind after Tom is done -
19 - is -- does anyone disagree that should waste
20 incidental to reprocessing be implemented for a
21 commercial fuel reprocessing production facility.
22 Tom?

23 MR. HILTZ: I'll sort of start out with
24 perhaps a bit of a confession, and that is that
25 whenever I start to try to understand the waste

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1 management issues and try to understand I get a sharp
2 pain in my head. I get this ice cream headache.
3 Because it's very difficult for me to sort of wrap my
4 head around what the issues are we're trying to solve.

5 Seems like a lot of the discussions are
6 steeped in, you know, regulatory history. We have
7 legislation that prohibits us from doing this. We
8 have -- DOE does it one way -- we may not want to do
9 it that way.

10 But it seems to me that we haven't really
11 established clarity in defining what we need to do in
12 order to revise the framework for reprocessing. And
13 we have two high priority gaps that are related to
14 waste I think that we are hopefully focusing on.

15 But two things pop up to me. Number one
16 is that there seems to be a creep in that we may try
17 to solve other waste-related problems in the context
18 of reprocessing. I can't say that with certainty
19 because I've already admitted that I haven't been able
20 to wrap my head completely around this.

21 But the second one I'm pretty sure is that
22 I don't know what the success path is. And I keep
23 hearing the discussions, and I don't know what the
24 success path is or what the options are that we need
25 to be considering for the reprocessing regulatory

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1 framework. So if someone has some succinct clarity
2 about that I would certainly appreciate that. Thanks.

3 MR. CAMERON: You know, I guess that
4 trying to facilitate this session I've had the same
5 sharp pain in my head. To find out where we are on
6 this. And Mike's slide 13 and then there was a slide
7 14 that had gaps and options on this.

8 I guess my way of trying to get some
9 traction on it was to find out whether there was a
10 disagreement on whether the weir concept should be
11 implemented for a commercial reprocessing facility,
12 which, unless I'm wrong, it seems like that is what 7X
13 is recommending. And that would be a pretty -- if
14 people agreed with that -- I mean, that would be a
15 pretty point. Jim?

16 MR. LIEBERMAN: Right. If NRC adopted the
17 concept that's proposed in 7X or, you know,
18 essentially the same type of idea I think that will
19 solve industry's concern to provide a path forward in
20 the design process from a waste stream point of view.

21 MR. CAMERON: Okay. And [indiscernible]
22 my solution to this -- to get rid of the headache --
23 is to try to find one little life vest to grab onto
24 such as this to maybe -- and then start building it.
25 And perhaps Don and Beatrice, in addition to what they

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1 were going to say, might give us a -- their view on
2 that particular issue. Don?

3 MR. HANCOCK: So if the issue is weir for
4 commercial reprocessing facilities -- is that the
5 question you want me to answer?

6 MR. CAMERON: That's -- yeah, that's it.

7 MR. HANCOCK: Well, I guess my answer is
8 maybe as opposed to certainly because the -- I am not
9 satisfied with the Savannah River Idaho weir. So if
10 that's what we're talking about I would have major
11 problems with that.

12 If we're talking about NRC developing a --
13 which my reading -- and somebody can correct me -- my
14 reading of the Gap 3 analysis that NRC is they're not
15 saying that what you would adopt is a Savannah River
16 Idaho weir, but rather you would look at the various
17 residues -- hardware, [indiscernible], et cetera, to
18 determine, you know, how they should be classified.

19 And if that's -- if what I just said is
20 what you're thinking about the answer to that is
21 probably that's okay. But if you're talking about the
22 former -- the Savannah River Idaho -- yes, there would
23 be a lot of concern about that. So to --

24 MR. CAMERON: Okay.

25 MR. HANCOCK: For me to give you any more

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1 answer than I just gave, if Mike or somebody wants to
2 clarify what NRC actually is proposing with Gap 3 or
3 whatever else would be helpful.

4 MR. CAMERON: Let's stop there and go to
5 Mike. And I don't want to get off on other points
6 because I'd like to see where we are on this -- go to
7 Mike for this and then I want to -- yes. Okay.

8 MR. LEE: The short version is there is an
9 existing arrangement, if you will, in regulatory space
10 on how to place certain waste streams. An option
11 could be to work within that existing framework.

12 The wrinkle, if you will, is that when you
13 look at Part 61 the Part 61 bucket, if you will, is
14 based on assumptions that are decades old regarding
15 the waste streams that are out there. So for any
16 reprocessing technology that comes along that the
17 Commission could potentially regulate there may be
18 radionuclides that weren't considered in the earlier
19 NEPA analysis.

20 As Jim as pointed out there's a -- and as
21 I mentioned or alluded to earlier, one of the tasks
22 independent of the reprocessing effort is to go back
23 to the Commission with ideas on how we might modernize
24 Part 61 to reflect yet to be defined waste stream or
25 radionuclides to perhaps better embrace a risk

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1 informed performance based approach to regulation. So
2 we're kind of working on two paths in parallel.

3 MR. CAMERON: So -- and just to make sure
4 that we're all on the same page here is that your
5 answer to Don is in terms of this establishing weir in
6 the context of commercial facility. It's not the DOE
7 weir approach. It's going to be a different approach.

8 MR. LEE: I don't believe it's envisioned
9 that we're looking at permitting the disposal in situ
10 of weir-like waste from a commercial facility. I
11 think it's envisioned that the desires to make sure
12 that we have a -- that the technology, if you will, is
13 kind of self-contained, that whatever wastes are
14 produced there is a disposition path, vis a vis a
15 geologic repository or some kind of other disposal
16 system, if you will, not unlike intermediate depth or
17 a shallow depth disposal facility consistent with the
18 hazard posed by the waste.

19 MR. CAMERON: Okay. I'm hoping we're
20 still answering the same question. But I know Don had
21 something else and Beatrice and Rod. Jim -- Phil, did
22 you have something on this weir business or --

23 MR. REED: [indiscernible].

24 MR. CAMERON: Okay. Well, we'll hold
25 there. But let me check in with Don and Beatrice and

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1 then go over to Rod and then to Jim. Don, do you have
2 another point that you want to make at this time?

3 MR. HANCOCK: Not on weir but on the
4 issue, yes. So if you still want us to talk about
5 weir I don't have any more to say.

6 MR. CAMERON: Okay. Maybe we'll try to
7 close. And I don't know, Rod, if you're on weir or
8 something else either, but --

9 MR. MCCULLUM: Yeah, I'm just trying to
10 answer Tom's question.

11 MR. CAMERON: Okay. Let's -- Beatrice,
12 what did you have? Weir or not weir.

13 MS. BRAILSFORD: Well, I'll go ahead and
14 do my weir rant. And then I do -- we can change the
15 subject.

16 MR. CAMERON: We have a weir rant?

17 MS. BRAILSFORD: We have a weir rant.

18 MR. CAMERON: Okay.

19 MS. BRAILSFORD: I'm very glad to hear
20 that NRC is not going to take the Idaho Savannah River
21 model of weir. And to kind of put that political
22 decision on any kind of level with the real honest to
23 God regulation was kind of driving me crazy. So thank
24 you.

25 MR. CAMERON: That was not much of a rant.

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1 Okay. Not that everybody's disappointed. That was
2 good. Thank you. Thank you, Beatrice. Should I go
3 to Jim or you?

4 MR. MCCULLUM: I'll try to be quick.
5 Because Tom asked what's the success path here. And
6 we've been talking all around it, and weir is involved
7 in this as well too. I mean, maybe I oversimplify
8 things, and for some strange reason this never gives
9 me a headache. I enjoy thinking about this sort of
10 thing.

11 But the success path to me is to provide
12 for the safe storage and disposal of all of these
13 wastes while at the same -- and this last part's
14 important -- while at the same time minimizing the
15 burden on geologic disposal. Because, remember, there
16 are only two reasons you reprocess or recycle. And
17 one is to provide more energy and two is to simplify
18 the waste stream -- to reduce the burden of geologic
19 disposal.

20 And we are just emerging in this country
21 from a world in which geologic disposal was
22 everything, including some things that maybe didn't
23 need to be. But it was definitely everything. Now
24 we're looking more like the British in terms of long-
25 term storage and so on and so forth.

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1 So, to me, that's the success path -- is
2 do we have a regulatory framework that provides a
3 clear, consistent, sensible disposal path for all
4 these materials while at the same time reducing the
5 burden on geologic disposal.

6 MR. CAMERON: Okay. Thank you, Rod. And
7 now let's go to Jim and then over to Phil. Jim?

8 MR. LIEBERMAN: I was just going to
9 respond to Don and Beatrice. From an industry point
10 of view we have no intent to dispose of waste on site
11 -- weir on site like Savannah River in Idaho in the
12 tanks. It's -- doing this weir process for -- the
13 ability to determine what wastes can go to a low-level
14 waste site or to a commercial disposal site versus
15 having to go to a geologic site.

16 MR. CAMERON: Okay. And Phil?

17 MS. BRAILSFORD: I'll just note that
18 Idaho's weir -- Idaho thinks it's going to send it to
19 WIPP.

20 MR. LIEBERMAN: Well, WIPP is at issue
21 with defense waste. The commercial waste doesn't have
22 that option.

23 MR. CAMERON: Okay. And Phil?

24 MR. REED: I was going to respond also by
25 saying that the weir that we're thinking of for

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1 commercial reprocessing plants has nothing to do with
2 the DOE type work related to Savannah River or Idaho.

3 However, unfortunately, that terminology
4 has been carried over because it was associated,
5 quote, with the word reprocessing, unquote, and now we
6 have to deal with it in terms of a situation I believe
7 for which it was never intended.

8 So, anyway, I'd like to address the last
9 bullet that Mike had on the slides there. Yesterday
10 we talked about a number of regulations that were
11 published back in the seventies that related to
12 reprocessing but have since been withdrawn but are
13 available for us to bring back if we need to.

14 That Appendix D is the original Appendix F
15 but now appears in Part 50, except one important part
16 has been removed. And that important part was low-
17 level waste. That actual regulation actually had some
18 definitions -- or some criteria related to what we
19 know as low-level waste today.

20 And it also indicated that that low-level
21 waste would be disposed of at that time, which was
22 Part 20 Section I think 120 or 320 which today is the
23 precursor of Part 61.

24 At the same time, a couple from when this
25 regulation was withdrawn, we had an application for a

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1 commercial reprocessing plant down at Barnwell. The
2 low-level waste -- at that time it was called low-
3 level waste -- it wasn't referred to as, quote, weir,
4 unquote. That low-level waste was designated to be
5 disposed of according to Part 20.102 I believe -- or
6 whatever the number was -- which today is the -- is
7 known as Part 61.

8 So if that plant had been operating today
9 that waste that had been generated would have been
10 disposed of quite conveniently in either Savannah
11 River or Hanford.

12 So it looks like it boils down to, is this
13 language of weir has to be legalized in some manner.
14 Somebody has to write some nice phrases in there so
15 that we get back on track of indicating that if we
16 generate a lot of volume of waste from a reprocessing
17 plant that has [indiscernible] of radionuclides, and
18 if those activities are sufficient to meet Part 61
19 they should be able to go into a low-level waste
20 disposal facility.

21 MR. CAMERON: Thank you. Thank you very
22 much, Phil, for that history on that and the bottom
23 line. And let's go to Marissa and then we're going to
24 go to Don for his other comment. And then I think
25 we'll see what the audience has to say.

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1 MS. BAILEY: Okay. As a [indiscernible] I
2 guess I would like to just get some reaction to the
3 fifth bullet behind me for addressing this issue.
4 Yes, address --

5 MR. CAMERON: Address --

6 MS. BAILEY -- which is to address this
7 issue, not in this rulemaking but in the rulemaking
8 for Part 61.

9 MR. CAMERON: And when you say this issue,
10 if we said you're going to address it through the
11 rulemaking of Part 61 would that -- this include all
12 of these aspects of weir, et cetera, et cetera? Would
13 that take care of the whole business or would it just
14 take care of the elements that aren't in the table for
15 low-level waste now -- krypton and whatever.

16 MS. BAILEY: Well, I mean --

17 MALE VOICE: [indiscernible].

18 MS. BAILEY: That's low-level waste and
19 [indiscernible] -- and so are we better off -- and to
20 address this as part of the bigger picture leading to
21 the [indiscernible].

22 MR. CAMERON: Okay. And that would be
23 important for you on this rulemaking because you would
24 just say we're going to wait for it to be addressed
25 there. And I think we need some input from everybody

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1 on that in terms of timing, et cetera, et cetera. But
2 if you did follow that fifth bullet route would that
3 take care of all the issues that you need to take care
4 of? Mike?

5 MR. LEE: I'll try to give you the two-
6 minute drill. The fifth bullet is written in -- it's
7 not intended to be code. The first -- I can read it -
8 -

9 MR. CAMERON: You did a great job.

10 MR. LEE: I can read it perfectly fine.
11 What's wrong with you? The first item there is Staff
12 Requirements Memorandum. [indiscernible] are papers
13 that the staff puts together. It's the staff's way of
14 communicating with the Commission. It's a very formal
15 process.

16 And in that particular Commission paper
17 the subject was the disposition of depleted uranium.
18 And what happened is there was some discussion in that
19 paper about what can DU, if I can call it that, be
20 managed under a Part 61 type of disposal arrangement.

21 And the Commission's direction back to the
22 staff was we need to introduce into Part 61 a more
23 explicit performance assessment requirement. And that
24 performance assessment which would be imposed on
25 existing and future licensees would on an interim

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1 basis address the issue of whether DU or any other
2 radionucleid that wasn't evaluated under the NEPA --
3 earlier NEPA process would be suitable under
4 situations or circumstances or designs, siting -- that
5 whole collection of issues -- be appropriate for Part
6 61 disposal scenario, which I mentioned earlier was a
7 near-surface type of an arrangement.

8 That rulemaking, a technical basis of
9 which has been approved -- and there's a rulemaking
10 effort now underway -- a draft rule will be available
11 in approximately one year. What the staff is doing
12 right now though is it received some direction
13 recently from the Commission to include blended wastes
14 in that rulemaking as part of any kind of performance
15 assessment evaluation. So we're huddling right now on
16 how to deal with blended waste as part of the DU or
17 what might be generically called unique waste streams.

18 The other direction that we got from the
19 Commission is independent of what you're doing right
20 now on the performance assessment provision of Part 61
21 -- or introducing explicit performance assessment
22 provision of Part 61, talk to us about what you might
23 do in any idea world to amend Part 61.

24 And so in that paper, which is due to the
25 Commission at the end of the year, which would likely

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1 be available -- probably publicly available sometime
2 thereafter -- the staff is laying out some options for
3 the Commission to consider.

4 And it's -- for lack of a better word it's
5 kind of an ala carte type of assessment of options.
6 One option could be a limited rulemaking to focus
7 solely on the 61.55 tables. Another -- there are
8 other options out there. Larry Camper at a recent
9 waste management summit spoke to those options that
10 were under consideration.

11 So it's kind of -- it can run from a very
12 simple tweaking of the rule, if you will, to a more
13 complex, more detailed reevaluation of what should a
14 new Part 61 look like based on 35 years of operational
15 experience, based on international experience -- whole
16 variety of things.

17 MR. CAMERON: So would -- it sounds like
18 it's a -- not necessarily a simple answer to take
19 Marissa's proposal -- and I don't mean that's what
20 your proposal is. But would -- should -- would all of
21 these issues that you're trying to deal with for the
22 regulatory framework for waste management issues for
23 reprocessing -- you're not going to be -- are you --
24 would you be able to address all of those issues in
25 this 61 rulemaking?

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1 MR. LEE: Our intention as part of this
2 Commission paper going upstairs is to acknowledge that
3 there are likely to be new and emerging waste streams
4 such as waste streams that are coming out of
5 reprocessing.

6 And we -- I can't speak for the Commission
7 but we'll point out to them that this is an issue that
8 they should consider in any direction back to us on
9 how we should proceed. I think -- if I can quote
10 Larry, I believe the plan is to talk to the public at
11 a future date about these options subject to
12 Commission approval.

13 So the short answer is we could certainly
14 accommodate these -- you know, the radionuclides that
15 would be coming out of a reprocessing waste stream if
16 that's --

17 MR. CAMERON: And it would --

18 MR. LEE: -- [indiscernible] --

19 MR. CAMERON: It would address the -- it
20 could address the weir issue [indiscernible]?

21 MR. LEE: Commercial incidental waste to
22 reprocessing, yes.

23 MR. CAMERON: Okay.

24 MR. LEE: Not the DOE issued, but wastes -

25 -

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1 MR. CAMERON: Right.

2 MR. LEE: -- that are not --

3 MR. CAMERON: Right.

4 MR. LEE: -- or similar to weir.

5 MR. CAMERON: I think we're all clear on
6 the DOE issue. And I want to go to people that have
7 their cards up. And we do have a guest in the
8 audience. We need to get to the public. But I want
9 to make sure -- Don, I don't want to lose your issue
10 that you were going to bring up. You had an issue
11 that you wanted to put on the table. And maybe I
12 caused you to forget it by now.

13 MR. HANCOCK: No. It's hard for me to
14 forget waste confidence.

15 MR. CAMERON: Okay.

16 MR. HANCOCK: I'm certainly willing to
17 defer. I agree. I think we ought to comment -- we've
18 run over a little bit already. I guess just to make
19 the point -- not the first time that the point would
20 be made -- is waste confidence is a very controversial
21 issue.

22 And I guess my basic point is what I've
23 tried to make a couple of times already, which is that
24 I think any reprocessing facility needs to be licensed
25 to handle all of its waste products for whatever the

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1 necessary time period is as opposed to assuming that
2 there will be some near-term solution to the problem
3 that we've seen historically doesn't necessarily
4 happen.

5 MR. CAMERON: Okay. Thank you. And let's
6 go to Beatrice and then let's close out with Jim and
7 Rod. Beatrice?

8 MS. BRAILSFORD: An unintended consequence
9 of following Don is that I get to repeat part of what
10 he says. But I guess this discussion has highlighted
11 for me maybe a broader question than we want to talk
12 about, but it may or may not happen on the ground.

13 It would seem to me that a reprocessing
14 facility will require interim storage of spent fuel,
15 then it will require reprocessing, then it will
16 require perhaps a fuel fabrication plant and storage
17 of fresh fuel. And because we want to solidify the
18 waste from an aqueous reprocessor it would require
19 both storage of some quantity of liquid high-level
20 waste, it would require some way of solidifying that
21 waste, which at this point is a vitrification plant,
22 and then a storage facility for solidified high-level
23 waste.

24 So back to Don's question -- and I
25 certainly want to echo Don's question about the time

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1 frame. Waste tends to get to certain political places
2 and stop.

3 But back to Don's kind of question from a
4 couple of hours ago I think, you know, that you have
5 this mega-reprocessing license, and then underneath
6 you have all these partial licenses, it looks to me
7 like you're talking like five or ten separate licensed
8 facilities, and some of them represent I would say
9 high risk.

10 MR. CAMERON: I'm sorry --

11 MS. BRAILSFORD: Not high financial or
12 regulatory risk, but they have to be regulated in a
13 way that acknowledges their high environmental risk.

14 MR. CAMERON: Thank you. And, Jim, if you
15 want to address what Beatrice has said, as well as
16 what you were going to say, go ahead.

17 MR. LIEBERMAN: Well, I would just say yes
18 to Beatrice. You have to consider all these
19 interactions. I wanted to respond to Marissa on this
20 fifth bullet. And I think it's premature because, as
21 Mike says, in December the staff owes the Commission a
22 paper on this comprehensive relook of Part 61.

23 As an individual I've written two letters
24 the Commissioners on my view how to do this. I've met
25 with each of the Commissioners. I'm very interested

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1 in how this is done. And you can do this with a
2 capital C comprehensive or a small C.

3 Capital C is you relook at the
4 classification systems -- you come up with new
5 concentrations. The small C is get rid of the
6 classification scheme -- who cares about the
7 classification scheme -- because the classification
8 scheme is based on a generic site and there's no
9 particular site will ever be the generic site.

10 But from a risk-informed point of view the
11 solution is each waste site needs to develop its own
12 waste acceptance criteria, and the waste acceptance
13 criteria for that particular site is based on a site-
14 specific performance assessment for that particular
15 site rather than for the generic site demonstrating
16 that this waste acceptance criteria for these
17 particular isotopes concentrations quantities -- it
18 will meet the performance objectives.

19 And you update that every few years. And
20 I think if you do that you will assure that for that
21 particular site you'll have a safe site. The
22 Commission -- I mean, that may be one of the options
23 the staff considers.

24 If you consider that option then weir
25 wouldn't be part of that. If you consider it with a

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1 more comprehensive approach than weir might be
2 appropriate for it -- it might be considered.

3 But the only place weir would ever be an
4 issue in an NRC regulatory space is in reprocessing.
5 So one could say the best place to focus on weir is in
6 reprocessing because a review -- or revision of Part
7 61 will be extremely controversial. The agreement
8 states will be very interested in it. There's a lot
9 of stakeholders with lots of different views and it's
10 going to be very complicated. And why add weir to it?

11 It just adds that much more complication.

12 So my vote -- NEI Task Force hasn't
13 considered this issue, but my vote is that to keep it
14 separate.

15 MR. CAMERON: And I notice that Tom's
16 headache is getting worse I think. But, Rod?

17 MR. MCCULLUM: Yeah. Taking --

18 MR. CAMERON: And then we'll go to
19 [indiscernible].

20 MR. MCCULLUM: Taking Jim's vote into
21 consideration and awaiting the full task force
22 deliberations I -- granted some things are premature.

23 I could, however, give a conditional yes to Marissa's
24 question.

25 If the success path that I described

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1 earlier, giving all of these materials a clearly
2 defined disposal path while minimizing the burden on
3 geologic disposal, can be accomplished through a Part
4 61 rulemaking such that all you would have to do in a
5 subsequent recycling rulemaking would be say See part
6 61, the answer would be yes.

7 So there's potential there. I look
8 forward to exploring it with the rest of industry and
9 the task force, and I would certainly look forward to
10 the task force interacting with NRC, whoever the
11 appropriate people are on the Part 61 side on that as
12 well.

13 MR. CAMERON: And I guess that's going to
14 grist for your mill too in terms of what you
15 [indiscernible] back up with.

16 MR. LEE: Being intimately involved in the
17 December Commission paper I have it on good authority
18 that we'll be giving -- acknowledging the letters that
19 Mr. Lieberman has written. So I can assure you that
20 we're -- that's part of the mix. And we're going to
21 ask the Commission to provide some direction. So,
22 Jim, no more letters. I only have two more weeks to
23 write this paper.

24 MR. CAMERON: And would you -- Mike, is it
25 possible that you might put in this paper exactly what

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1 Marissa suggested, and as amended by Rod, that here's
2 a way to solve the -- address the waste management
3 issues for reprocessing. Can you put that in there?

4 MR. LEE: Well, I think the economists
5 would call this the free rider benefit. One of the
6 challenges in considering a revision to Part 61 is
7 trying to develop a regulation that's flexible and
8 elastic to changing waste streams. And if -- just as
9 a hypothetical if we were to write a radionucleid
10 neutral regulation that focuses on the sub-part C
11 performance objectives that's certainly one way to
12 skin this cat.

13 MR. CAMERON: Okay.

14 MR. MCCULLUM: I like it. Radionucleid
15 neutral.

16 MR. CAMERON: What's that?

17 MR. MCCULLUM: Radionucleid neutral -- I
18 like that.

19 MR. CAMERON: You just like the word
20 neutral. That old car you talked about is stuck in
21 neutral somewhere I think.

22 MR. LEE: Not to be flip though we're
23 trying to come up as part of the development of this
24 paper with some realistic ways of addressing the issue
25 and developing regulation that's focused on future

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1 waste streams as well as the existing waste
2 challenges.

3 MR. CAMERON: Okay. And thank you all.
4 Marissa, final comment, and then we're going to go out
5 to the audience and then take a break.

6 MS. BAILEY: Yeah. My final comment is
7 really a response to Beatrice, and I think you make a
8 very good point -- I agree with it. In fact, I think
9 reprocessing forces you to take a look at the entire
10 back end of the fuel cycle. And that's one of the
11 things that we've done at the NRC.

12 And, you know, earlier this week I talked
13 about the integrated spent fuel management plan. And,
14 you know, we recognize that when you're looking at the
15 entire back end of the fuel cycle, whether it's spent
16 fuel storage, reprocessing, transportation, and
17 ultimate disposal -- they're all connected and we need
18 to be making sure that we are promulgating rules and
19 regulations and guidance and policy that are -- that
20 take into consideration the entire back end of the
21 fuel cycle, and that we're not issuing rules and
22 regulations and guidance that might conflict with
23 those aspects of the fuel cycle.

24 So I agree with your comment, and I think
25 we are looking into that as part of the integrated

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1 spent fuel management program at the NRC.

2 MR. CAMERON: Okay. Thank you. Thank
3 you, Marissa. This is the time when we go to the
4 audience. And we're fortunate to have Representative
5 Heaton with us, who's the chair of the Radioactive and
6 Hazardous Materials Committee of the New Mexico
7 legislation. I'll turn it over -- do you want to go
8 here?

9 We were joking around about don't tell a
10 politician that he has unlimited time and he's already
11 taken the podium.

12 REPRESENTATIVE HEATON: I've already taken
13 the podium.

14 MR. CAMERON: So we're in trouble.

15 REPRESENTATIVE HEATON: So get your
16 cushions out. No, really, I want to first start out
17 by thanking the NRC. I have appreciated through the
18 years the realistic approaches that you try to take to
19 regulation, as well as practical approaches that make
20 things go forward and do things efficiently. So from
21 that perspective I want to thank the NRC and what you
22 do in that regard.

23 And I want to thank you for anticipating
24 some of the issues associated with the back end of the
25 fuel cycle as well as what's happening with the Blue

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1 Ribbon Commission and what some of those potential
2 outcomes may be. So I want to thank you for
3 addressing those as well.

4 As far as the definitions go, in the
5 legislative process, both in the state and at a
6 national level, we've been fighting the definition
7 issue for, you know, as long as I can remember -- the
8 last 12 years at least. It is a significant problem,
9 and I think that somehow you need to come up with some
10 solution to it and -- you know, for instance, with
11 WIPP it's 23 curies per liter, which is the -- you
12 know, the amount. And it's definitive, you know what
13 it is, and I think that somehow those kind of
14 definitions need to be in place.

15 And then I agree with the idea of
16 performance assessment associated with once you
17 determine what the activity level is then getting to
18 some performance assessment for the disposal process -
19 - but to make sure that it does indeed fulfill the
20 disposal interest that we're all concerned about. So
21 I think that that's a huge issue and somehow needs to
22 be addressed.

23 I apologize for not being here yesterday,
24 but I'm in the heat of what's called a campaign and we
25 had one of those interminable forums last night that

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1 go on for hours and you debate back and forth about
2 not the real issues but what somebody's accused the
3 other of saying that is untrue.

4 It's a terrible situation in our political
5 system that it's deteriorated to this state that we
6 can't talk about the issues in a civil, kind way and
7 the prospects of what we intend to do and how we're
8 going to do it rather than what somebody else hasn't
9 done and distort their record. So, anyway, that's --
10 I won't go into that -- I could speak for an hour
11 about that.

12 But, anyway, as far as the interim storage
13 issue, I think it is a critical thing to consider. I
14 think that it has to be considered for a number of
15 reasons, and I think that you should on the front end
16 anticipate based on what the Blue Ribbon Commission
17 dictates in terms of a storage medium where that
18 interim storage facility should be.

19 I think moving the waste multiple times
20 across the country creates a certain amount of risk
21 and, you know, a huge cost. So I think that coming
22 that some conclusion based on that and maybe what
23 ultimately becomes the site -- I think the interim
24 storage facility should be adjacent to it as I do
25 think that the reprocessing facility should be

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1 probably as well adjacent to that site.

2 But to talk about a couple of points,
3 there are a number of facilities in the country that
4 have been [indiscernible]. As you're aware, some 13
5 states have [indiscernible] facilities in those states
6 and they would like to get the waste out of their
7 states -- the cores out of their states and moved
8 somewhere so they can indeed move to a green field in
9 those particular sites.

10 There are also some reactor sites that I
11 am told are getting low on space for storage -- not
12 many, but there are some. And so there needs to be a
13 place for them to move that waste.

14 Thirdly, I think that the issue of the
15 fines and the lack of response since the -- since 1998
16 has put the federal government in a position of
17 potentially owing 2, 3, 4, \$20 billion to the industry
18 for not meeting its obligations for having moved the
19 waste off their site.

20 So I think that having an interim storage
21 facility -- it moves the waste and puts it in the
22 hands of DOE, which by regulation -- puts it in their
23 hands and it gets it off the sites. It mitigates the
24 lawsuit. And we're moving forward in the process.

25 And I think that this idea that there

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1 should be a DOE site only should be changed. I think
2 that that's not practical. I think that you'll see
3 the industry in the private sector step up and make
4 the decision that they are willing to do this. And I
5 think that you will find cities around the country and
6 states around the country that will be willing to do
7 it. And I think it should be allowed to occur maybe
8 under NRC regulation through the private sector. If
9 that's the way it goes the DOE could put one in
10 themselves -- and maybe there needs to be two or three
11 of those.

12 The challenges that I see in interim
13 storage are that we have to overcome the idea that has
14 developed in the country to some degree -- and
15 probably because of Idaho -- that there would never be
16 answer to the movement of their waste.

17 And so I see that states probably are
18 going to be reluctant to take interim waste unless
19 there is some ironclad agreement that that waste gets
20 removed from that state if -- in some period of time.

21 And I'm not sure what that needs to be -- whether
22 it's 50 years or 100 years or tied to the robustness
23 of the container and the overpacks and what have you.

24 It ought to be tied to something that's physical
25 about the sustainability of the container I think.

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1 But I would advise you not to be too short
2 in that number because there will be a lot of give and
3 take in the states about what that number needs to be
4 and what is reasonable about the time frame. So I
5 would suggest that you look at some number that you
6 can defend based on the robustness of the container
7 and the ability to store it over a long period of time
8 if you will. I'm trying to give you what I think are
9 some political issues associated with these things --
10 and maybe you've already discussed them.

11 Or -- and if they're not removed then for
12 a state to step -- for a state to be willing to do
13 these things I think it's going to require that there
14 be a significant fine if it's not removed and that --
15 or the other process could be that you pay by the
16 container. And at some period of time when you would
17 have expected it to move to a repository or to get
18 reprocessed or what's going to happen that the cost
19 for that container being stored becomes higher and
20 higher and higher till there's extreme motivation to
21 get something off dead center.

22 And that's what it seems to take. We
23 don't ever do anything in this country unless there
24 seems to be a crisis. We move by crisis management
25 and rather than doing things reasonably. So those are

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1 -- and I think that those are some of the things about
2 the interim storage I'd like to speak to.

3 About reprocessing or not to reprocess I
4 guess is based on a number of issues. The finite
5 uranium resources of the world I think makes one -- is
6 one of those big decisions. I think that also the
7 impact of the additional waste being generated, which
8 we've just talked about, cost of reprocessing versus
9 new fuel, and cost of managing the non-reprocessed
10 fuel storage disposal -- all of those sorts of things
11 -- the increase in the volume of waste that we've all
12 talked about -- that there needs to be some cost
13 analysis being done that is realistic and makes some
14 sense about what direction I think that we actually
15 go.

16 And, of course, there's the philosophical
17 opinion in the country, and indeed the world, about
18 our position on recycling. Recycling to me is the
19 cornerstone of waste management, whether it's aluminum
20 cans or reduced paper or spent fuel -- whatever it
21 happens to be. Reducing the volume makes enormous
22 amount of sense.

23 The French essentially, and others that
24 are recycling, reduce the volume of waste by
25 approximately two-thirds, and I think the numbers we

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1 saw up there verify that. They recycle two times and
2 the last cycle -- I guess you could recycle it again
3 but you probably have to put 23 percent plutonium in
4 there to get enough [indiscernible] material to make
5 it active enough.

6 But, at any rate, the way that goes I
7 think makes some sense in terms of waste reduction
8 volumes. So I think that has -- is an important
9 consideration.

10 And I think that the other big issue about
11 recycling is that from a global perspective we talk
12 about how we're going to manage the fuel in the rest
13 of the world and what we're going to do about uranium
14 enrichment in the rest of the world and how we're
15 going to control that and how we as a country are
16 going to supply fuel to the rest of the countries of
17 the world or the European Union and others that have a
18 coalition in the global interest of not -- of
19 containing proliferation -- how we're going to do
20 that.

21 And, yet, we as a country are expecting
22 the Europeans or the Japanese to do the recycling and
23 we sort of stand off to the side. I think that we
24 have a moral obligation as a country to get engaged in
25 the same activity that we would expect other countries

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1 to be engaged in -- and that's recycling and then
2 replacing that fuel for those other countries.

3 So that's a couple of comments.
4 Retrievability of waste when it's being talked about
5 is a huge issue. I think that the Blue Ribbon
6 Commission is -- clearly has some lean toward salt at
7 this point. And if you're going to put waste in a
8 salt repository, salt moves -- it's very plastic. You
9 know -- as you know, the National Academy recommended
10 it in 1957 and have continued to recommend it since.
11 And it makes a lot of sense.

12 But putting something in salt that's not
13 retrievable -- or that you want to be retrieved gets
14 to be a serious issue, even though it could be
15 designed for at least 100 years for retrievability.
16 So those are issues that I think need to be
17 considered.

18 I'd like to make, if I could, just a
19 couple of comments about WIPP and the WIPP process
20 because I think that not only you but others are
21 talking about how do we move into recycling,
22 reprocessing -- how do we move into a permanent
23 repository.

24 And I spoke to the disposal subcommittee
25 of the Blue Ribbon Commission -- when was it, Don -- a

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1 couple of months ago -- we spoke. And the process
2 that we used in New Mexico is -- was extraordinarily
3 lengthy, but it worked. It -- we actually started in
4 the era of about 1975 -- ended up getting it open in
5 1999. So that's a long period of time -- 25 years, if
6 you will -- to go through that whole process.

7 But what we ended up doing is that in --
8 the community itself in southeastern New Mexico became
9 engaged in it and said let's see what the questions
10 are, let's see what the problems are, let's learn
11 about it. They were as naive about it as anybody you
12 could find.

13 And they did engage in it, did learn about
14 it, did become confident in it, and as a consequence
15 took on the project. And it was because of DOE's
16 efforts and education that made that happen.

17 And then subsequent to all of that, once
18 they became accepting then the 1982 law was passed to
19 allow the money to flow into the drilling the shaft
20 and doing the experiments in the salt to confirm it.
21 And then in I think 1991-92 time frame the Land
22 Withdrawal Act was created to move the process forward
23 at that time.

24 Prior to that high-level waste was a
25 consideration for WIPP. And it was withdrawn out of

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1 it -- out of the consideration and only transuranics
2 were left in it. But there is a hot cell at WIPP
3 designed for waste handling of high-level waste, and
4 it was originally discussed from that point of view.

5 And so the thing opened. It's been open
6 eleven years now without incident. It's been a
7 tremendous, tremendous facility. And I think that
8 something in that process needs to be looked at in
9 terms of how indeed get a facility open and how we get
10 reprocessing started in the country.

11 So I think that you would have to have
12 today an agreement with the state in terms of the
13 Governor of the state -- I think that's going to be a
14 critical issue getting the community and the state,
15 subsequently getting the Governor to sign an
16 agreement. And that agreement, again, needs to be
17 ironclad, and perhaps NRC needs to be the group that
18 if there is a health and safety reason they would
19 mediate that argument.

20 Because, otherwise, the state should not
21 be able to back out. We can't continue to spend \$14
22 billion every so often to try to look at a repository
23 that is not going to be a fait accompli. I mean, it
24 just not -- doesn't make sense for us to go through
25 that process.

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1 So those are a few of my comments. And
2 I'd be happy to try to answer any questions that any
3 of you may have. Thank you so much. Appreciate it,
4 Chair.

5 MR. CAMERON: Thank you very much,
6 Representative Heaton. And we're going to take a
7 break now. But, Representative, are you going to
8 available for discussion -- whatever?

9 So let's take a break and come back at --
10 let's come back at 25 till four. And then we're going
11 to go to environmental with Miriam. And after that
12 we'll have some closing remarks from all, including
13 Lawrence Kokajko.

14 (Whereupon, a short recess was taken.)

15 MS. JUCKETT: While everyone is making
16 their seats I'll very briefly introduce myself. My
17 name is Miriam Juckett, and I work at the Center for
18 Nuclear Waste Regulatory Analysis, which works with
19 the NRC.

20 And Chip has been very kind to let me help
21 facilitate the last couple of meetings and
22 [indiscernible] and agreed to let me do one of the
23 sessions in the afternoon, although I think I'm kind
24 of getting the short end of the stick since I'm
25 getting the shortest, last, last session where

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1 everyone's tired and doesn't want to make any more
2 comments. So keep up your spirits and let's have a
3 good discussion on the last one.

4 This section on the reprocessing and
5 recycling and environmental protection is going to
6 focus, of course, on the environmental side of this.
7 And I think where we want to steer the discussion is
8 going to be on how the NRC should go about making a
9 reprocessing rulemaking in regards to an environmental
10 review.

11 And Wendy Reed is going to start us off
12 with a kickoff presentation for this.

13 MS. REED: Thank you, Miriam. So, yeah,
14 I'm going to talk to you about the things the NRC is
15 doing right in the realm of environmental protection
16 as it pertains to the reprocessing and recycling.

17 There's a couple of things that we're
18 looking at right now. The first thing I'd like to
19 draw your attention to is that staff -- specifically
20 the FSME staff -- and I don't know the full acronym
21 either -- yeah, no one does. Anyway, they're planning
22 what is called an environmental topical report -- or
23 an ETR, which I'll refer to in the future.

24 And that's an internal research project.
25 And it's primarily to assist the regulatory basis

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1 development. And also in the future it would be used
2 as well to aid the decision making. If reprocessing
3 went into rulemaking an EIS would probably be required
4 because it would be major rulemaking. And so the ETR
5 would help to inform that also.

6 But I just want to stress that an ETR is
7 not an EIS. The ETR is an internal document.
8 [indiscernible] that, there are plans that have been
9 finalized by the NRC to make it public, but it's very
10 separate from an EIS. And, as I said FSME is taking
11 the lead for that.

12 The second is -- concentrates more on the
13 -- what the working group is doing where main focus is
14 really on effluent and emissions. There's a Gap 19,
15 which is specifically focused on effluent control
16 monitoring and also looking at other aspects of
17 environmental protection, confinement, containment,
18 the use of filters -- that kind of thing.

19 So I'll just give you a brief outline of
20 what an environmental topical report could possibly
21 contain. It could discuss the purpose and the need
22 for the proposal for making action, give a brief
23 technology history of recycling and reprocessing,
24 description of a facility and the interactions it
25 would have with the environment, and provide a

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1 discussion of the construction, the operation, and the
2 postulated accidents, and would also address
3 decommissioning aspects too. And it will give a
4 comparison between open and closed nuclear fuel cycles
5 as it relates to the effect on the environment.

6 I'm just going to skim through the next
7 slides because I think that everyone's pretty much
8 familiar with the concept and closed cycle. So it's
9 just a little flow chart giving you the open fuel
10 cycle, the once through that is currently in practice
11 in the United States -- no recycle -- all the spent
12 nuclear fuel would be planned to sent to disposal.

13 Current spent nuclear fuel discharges
14 range in 2,000 to 2,500 megatons of heavy metal
15 annually, and we use -- possibly use the 2,500 tons
16 per year as a basis.

17 And then the closed fuel cycle is shown
18 here where you would actually reprocess the spent
19 nuclear fuel and you would recycle and produce MOX
20 fuel that would be sent to light [indiscernible]
21 reactors. Your high-level waste would ultimately be
22 sent to a repository right now. And, again, you use
23 the same basis of through put -- oh, not throughput --
24 I'm sorry -- basis of spent fuel.

25 Now, as I said, an ETR could contain a

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1 generic description of a reprocessing facility. And I
2 think it's Beatrice who brought up the various aspects
3 a nuclear fuel reprocessing and recycling plant could
4 take on. And these would, of course, include a spent
5 nuclear fuel receipt and storage area -- possibly like
6 a spent fuel pool.

7 A facility that would dismantle the fuel -
8 - it could actually possibly -- oxidation is mentioned
9 here. That's -- I believe that was process developed
10 by Oak Ridge National Laboratory to manage tritium --
11 to capture tritium by heating the fuel. And then
12 you'd have a dissolution separation so you can divide
13 up the [indiscernible] of the used fuel into the
14 products that you want and to the waste.

15 On site you could have again the
16 manufacture of the MOX fuel, et cetera, management of
17 byproducts such as noble gas -- not noble gas -- noble
18 metals. And then you have storage of products -- your
19 fresh MOX fuel and certain byproducts. And then you'd
20 have aspects relating to waste management, treatment
21 and storage, possibly a vitrification plant, shipping,
22 transportation capabilities, and then also your
23 support facilities -- maintenance, chemical storage,
24 recycling of solvents -- that kind of thing.

25 Now, the second part we -- this was kind

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1 of discussed a lot in the Rockville meeting -- was
2 about the 40 CFR 190 requirement, which is an EPA --
3 Environmental Protection Agency -- regulation. And
4 the NRC regulates to this EPA limit via Part 20, and I
5 think Appendix I, Part 50.

6 And there were two aspects to this
7 regulation -- dose limits and quantitative limits.
8 The dose limits are relatively low. They're based
9 upon individual health impacts, and the details given
10 that. Now, the two minor bullet just put it into
11 context at how low they are. A check x-ray is about
12 10 [indiscernible], for example. And then if one was
13 to move from Denver -- I'm sorry -- to Denver, yes,
14 from Washington, D.C. and live there for 12 months you
15 would probably get an increase in the background
16 radiation of our 20 [indiscernible] per year.

17 And from the input we have from modern
18 reprocessing facilities and feedback in meetings such
19 as these levels seem to be comfortably met by
20 reprocessing facilities today.

21 The second -- the quantitative one -- it
22 seems to be more tricky to me. And this is actually
23 based upon collective exposure of populations. And
24 it's the collective dose, which is very small doses to
25 very large populations, and it is a possibility that

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1 this may overstate the impact.

2 So this gives you the -- some figure for
3 the two parts of the regulation. Essentially all
4 releases that are allowed in 40 CFR 190, if you like,
5 would come from reprocessing operations.

6 The left table is the dose limits, which I
7 mentioned before, and don't seem to be as much of an
8 issue for reprocessing facilities. On the right side
9 of the table it gives you the isotopes that are
10 actually mentioned, and specifically in the regulation
11 -- krypton 85, iodine 129, plutonium 239, and the
12 other transuranic elements -- isotopes.

13 The limit in the regulation is 50,000
14 curies of [indiscernible], and then 5 millicuries for
15 the iodine and .5 for the plutonium and the
16 transuranics. And I think this is -- the potential
17 emission, which is based on I think a burn of about
18 52,000 watts -- megawatt [indiscernible] per ton basis
19 -- shows that the potential emissions from
20 reprocessing would be considerably higher currently
21 than the regulation would allow for.

22 This slide just gives you a little bit of
23 background about the basis for the EPA regulation. As
24 I mentioned before, it's based on the collective dose.
25 And at the time the regulation was developed it was

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1 developed using a postulated number of nuclear power
2 plants that would produce 1,000 gigawatt of energy.
3 And that's actually ten times the actual value that
4 exists today.

5 It was also postulated on the existence of
6 1,500 megatons of [indiscernible] heavy metal
7 [indiscernible] reprocessing plants in the United
8 States. And the actual value today is zero.

9 In addition, it was based on relatively
10 short cooling times before reprocessing took place,
11 which is one to five years. And the current practice
12 I believe in foreign reprocessing plants is four to
13 five years.

14 It was also based on a landlocked site.
15 And, again, if you look at where La Hague is, you look
16 at [indiscernible], you look at Rokkasho -- they're
17 all on the sea.

18 It's not mentioned here, but I would like
19 to draw attention to a report that Sandia National Lab
20 did about the basis -- the technical basis for the 40
21 CFR 190. I don't know if it's on the reprocessing
22 website, but it's very -- a lot of very good
23 background about the basis for the EPA regulation.

24 Okay. So I guess some things to think
25 about -- as I mentioned emissions as they stand could

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1 exceed the limits that's stipulated by the EPA.
2 However, some emission control technologies could add
3 potential hazards. And I mentioned briefly
4 voloxidation. And what voloxidation involves is you
5 take your spent fuel prior to dissolution and you heat
6 it to very high temperatures in an atmosphere of
7 oxygen.

8 And the trouble is obviously that spent
9 nuclear fuel contains some materials that are
10 pyrophoric that can catch fire. So then you're
11 introducing that risk into the mix.

12 The second was the krypton capture. If
13 you do capture your krypton because it is a gas you're
14 likely going to have to store it in a compressed or
15 cryogenic storage facility, and so then you have that
16 risk too.

17 One of the things you can do to reduce the
18 krypton and the tritium significantly is by
19 reprocessing old fuel -- and we certainly have quite a
20 lot of that in this country. If you reprocess fuel
21 that was over 30 years old then you've reduced the
22 krypton and the tritium content by about 90 percent
23 because they have relatively short lives between 10
24 and 12 years each.

25 The downside of that is that you are going

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1 to increase -- sorry -- you're going to decrease your
2 fuel value because you're allowing some of the
3 plutonium 241 to [indiscernible] to produce americium
4 241. And that has a half life of about 250 years, and
5 so that would actually increase the burden on the
6 waste management because you would have the -- the
7 heat load would be increased.

8 And another thing is that the iodine limit
9 was based upon many assumptions, one of which being
10 the number of nuclear reprocessing facilities and the
11 nuclear power plants exist, and that may not be as
12 valid today.

13 So what the NRC would like to get a feel
14 for is what kind of requirements do we need for
15 environmental protection, what kind of technologies do
16 we need for confinement/containment, use of filters --
17 HEPA filters -- that kind of thing. Should they be
18 performance based? For example, should we set minimum
19 decontamination factors? And how that ALARA, as low
20 as reasonably achievable, fit into the mix?

21 And, finally, there's just some questions
22 for discussion which actually -- which relate to the
23 ETR which has been in proposal -- has been proposed
24 and also through ALARA and other regulations that
25 would pertain to environmental management. Thank you.

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1 MS. JUCKETT: Thanks, Wendy. As Chip has
2 done with the other presentations if any one has any
3 comments or questions about what's been presented we
4 can let Wendy go ahead and go -- I see Beatrice
5 already has her card up. (Pause.) She needs a
6 second. (Pause.) Does anyone else have anything in
7 the meantime? Need a clarification? Go ahead.

8 MS. BRAILSFORD: Sorry. I just have a
9 clarifying question, Wendy. On slide 8 did you say
10 that these are the only isotopes covered by the
11 regulation?

12 MS. REED: I believe that's the case.
13 Those are the only ones if 40 CFR 190 that are
14 mentioned specifically.

15 MS. BRAILSFORD: Okay. Thanks.

16 MS. JUCKETT: Jose, can we put it back on
17 the other question slide? I notice that these are
18 quite a bit different than what's in the agenda, so
19 I'll go ahead and steer it back to where I thought we
20 might want to go with this originally, which is what
21 kinds of things the NRC might want to consider in
22 their environmental review as far as the scope and the
23 nature.

24 And, of course, it's -- there's a lot of
25 different factors to be considered in this kind of

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1 thing. So I'd be interested to hear from the NRC.
2 Maybe Tom has a comment on what kinds of things you
3 think might be important to start off with.

4 MR. HILTZ: Thanks, Miriam. I do want to
5 reemphasize and make clear where we are in the
6 environmental review process for a potential
7 reprocessing [indiscernible]. I think just to build
8 on Wendy's slide, right now there is no significant
9 federal action in front of us so we haven't entered
10 the NEPA process.

11 But I think we've looked at what's in
12 front of us with regard to revising the framework, and
13 we realize that the environmental piece and likely a
14 full environmental impact statement will be needed to
15 support any proposed rulemaking.

16 With that in mind we are preparing a sort
17 of broad scope environmental technical report to help
18 inform those aspects of the process that we can early
19 on in the process. And then my understanding is that
20 the results of that environmental topical report
21 should we be directed to move to rulemaking will be
22 used to inform the draft environmental statement,
23 which will go through the normal environmental NEPA
24 process for a scoping meeting and scoping period.

25 So I think at this point, at least in a

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1 preliminary phase, we're interested in understanding,
2 you know, what issues should be consider in that
3 environmental report. How should we scope it? Should
4 we limit it to just aqueous processing? Should we
5 bound it some other way? Are there other insights
6 about impacts?

7 Maybe folks are familiar with the
8 environmental impact statement that was done for --
9 the programmatic environmental impact statement that
10 was done for [indiscernible] -- if there's some
11 insights from that we should particular pay attention
12 to. So, with that -- I mean, hopefully that will help
13 generate some discussion.

14 MS. JUCKETT: I think that's good. I
15 think it's a good opportunity for all the stakeholders
16 to be able to give their input for that. Rex [sic],
17 go ahead.

18 MR. MCCULLUM: Yeah. I think the ETR is
19 an excellent idea, and I'm glad to hear that NRC is
20 publishing that. And you will be putting it out for
21 comment. Correct?

22 MR. HILTZ: I don't think that decision
23 has been made. Preliminarily I do not believe that we
24 will put the ETR out for public comment. The results
25 of the ETR will be rolled into the EIS which will be -

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1 - the draft EIS, which will be available for public
2 comment.

3 And I want to provide a distinction
4 between of publicly available for comment and publicly
5 available. So -- and your question was would it be
6 publicly available for comment.

7 MR. MCCULLUM: Yeah. Available does at
8 least allow that there will be chances for reactions
9 to it and discussions to it. And the reason I think
10 this is valuable is there's some probably some
11 iteration that needs to happen from where we are now
12 to before we get an EIS.

13 And I particularly -- as you might expect
14 I'm interested in the subject of technology
15 neutrality. That's going to be challenging. I mean,
16 I could envision an EIS looking at multiple scenarios,
17 both in terms of different processes, some of which
18 will have more information about than others. And in
19 terms of different levels of facility capacity you've
20 got a thousand metric tons up there which would
21 envelop most of the foreign facilities.

22 But the idea that you would put something
23 out that would, to the best of NRC's ability, explore
24 the limits of technology neutrality and maybe raise
25 some of the issues where you don't think you have

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1 enough information to do an EIS.

2 And let industry response to those, you
3 know. Let us have the opportunity to say, no, we
4 think there are some things you can do for this
5 scenario or that scenario. And I'm looking with, you
6 know, all three of the major vendors represented here
7 having -- giving them the opportunity to react to that
8 and, you know, again, to try to make their case for
9 how you could do this in a technology neutral manner I
10 think would be important.

11 MS. JUCKETT: Are there any comments about
12 that from what Rod's asking for? (No response.) I
13 know it's the afternoon. Go ahead, Wendy.

14 MS. REED: Yeah. I'd just like to follow
15 on from what Tom said. The ETR will be made public
16 once it has been finalized. It is primarily to help
17 with the regulatory basis development.

18 MS. JUCKETT: Tom, can you give a kind of
19 time line about when the ETR might become an EIS --
20 where that would fit in the process? You were
21 mentioning that it might move to an EIS from an ETR.

22 MR. HILTZ: Well, it will help inform a
23 draft environmental impact statement if we're directed
24 to proceed with rulemaking. So my understanding is
25 that there is no significant federal action associated

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1 with this until we embark on -- are directed to embark
2 on a rulemaking process.

3 MS. JUCKETT: Okay. Well, we can go ahead
4 and move on to another one of the topics. I had asked
5 Rex before the meeting if he would mind giving a
6 little bit of international perspective that's
7 mentioned on one of the bullets -- it was also on your
8 agenda -- as far as what kinds of things are
9 considered for the international practices that we
10 might want to consider here.

11 MR. STRONG: Okay. I'll sort of dive into
12 this. You can decide how much of it is relevant and
13 what's not.

14 Let's think about discharge in the marine
15 environment. We'll think northeast Atlantic just as a
16 place to start. There is something called the OSPAR
17 Convention to which I think it's fair to say all the
18 countries which have a border with the North Sea in
19 the east Atlantic [indiscernible] and one or two
20 others such as Switzerland.

21 So this is an international convention.
22 I'm not entirely sure it's got legal force, but it's
23 certainly got moral and political force. And there's
24 no doubt whatsoever that the parties to it wish to
25 meet their international obligations. And these are

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1 all about reducing discharge to [indiscernible]
2 environment ultimately such that concentrations
3 arising from manmade radioactive materials should
4 basically be close to zero -- and, incidentally, by
5 2020.

6 Those contracting parties make a report to
7 the OSPAR Commission on a frequency of about once
8 every three years on their use of best available
9 techniques for the purposes of minimizing discharges
10 into the marine environment. And in this mix actually
11 is an international obligation, which is to use best
12 available techniques. So those reports are all out
13 there. As far as I know they are publicly available,
14 possibly via the OSPAR website, or, if not that, then
15 the OSPAR Commission.

16 So just as a matter of fact for current
17 nuclear technologies -- and I don't just mean
18 reprocessing -- those contracting parties who are
19 nation states have offered up their reports to
20 demonstrate their compliance with their international
21 obligations. So that material is out there and you
22 can see what the different countries have done and the
23 techniques that they have used.

24 And I stress techniques because that word
25 includes both technology, but also the ways in which

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1 that technology is used. And that takes us into
2 management systems stuff, quality assurance, training
3 of operators, and all that.

4 There will also be some information in
5 there almost incidentally around techniques used to
6 limit discharges into the atmosphere because of the
7 potential for those atmospheric discharges to affect
8 the marine environment. So atmospheric discharges may
9 be affecting the marine environment. So a little bit
10 incidental but, nevertheless, information that's out
11 there.

12 I think perhaps the other thing that comes
13 to mind around international practice really flows
14 through the IAEA and the basic safety standards. So
15 basic fundamental standards that states which members
16 of the United Nations basically agree to use, as you
17 were, for the purposes of their own internal self-
18 regulation. And, of course, included within that set
19 are things about not just the impact on workers, of
20 course, but the impact on members of the public
21 arising from discharges.

22 Now, within that model there is a
23 presumption that if people are actually protected then
24 so is the environment. Now, there is another point of
25 view, of course, particularly in environments where

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1 there aren't many people. There maybe another
2 dimension to it. And the whole question of protecting
3 flora and fauna per se is a topic which is a matter of
4 live debate in the IAEA and elsewhere.

5 So I think what I'm trying to say, from
6 the point of you just wanting to understand a bit more
7 about international practice, is there's quite a lot
8 of readily available published information which any
9 of you can go away and, as it were, dig out and just
10 see what there is. The caveat around it, of course,
11 is that it does all relate to technologies which are
12 established and are being used.

13 So it's certainly a guidance -- it's
14 certainly there as guidance what is available now and
15 what could be done now. New technologies
16 [indiscernible] question mark, question mark. I think
17 at that point I'll stop.

18 MS. JUCKETT: Thank you. On that note I
19 kind of want the industry to kind of weigh in a little
20 bit on what kind of technologies might be available
21 right now and what kind of technologies are under
22 development that might assist with those kinds of
23 things. Let me go ahead and get Don's -- Don's got
24 his card up.

25 MR. HANCOCK: Well, I was going to talk

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1 about a different subject. So --

2 MS. JUCKETT: That's okay. Okay.

3 MR. HANCOCK: -- go ahead and get -- I
4 think you're right. Go ahead and get industry
5 reaction to what --

6 MS. JUCKETT: Okay.

7 MR. MCCULLUM: I think I'd leave that up
8 to the experts on the various facilities.

9 MS. JUCKETT: Sven, do you have a comment?

10 MR. BADER: Yeah. I think -- you know, as
11 Rex pointed out, there's a lot of information out
12 there and publicly available, including the slides
13 that AREVA gave the Nuclear Waste Technical Review
14 Board which showed the continuous improvement of
15 releases from La Hague, both airborne and marine
16 environment releases. I think the stats that we
17 usually cite are for [indiscernible] upwards of over
18 50 percent or better reduction in releases over the
19 time frame.

20 And, in addition, there's also volumes of
21 the high-level waste that we've reduced over the time
22 frame from -- let's see. I actually have the number
23 here somewhere. But it's a factor of eight reduction
24 in volume of high-level waste per metric ton processed
25 through the facility in the 20 years of operation at

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1 La Hague. So there's continuous -- a culture of
2 continuous improvement at the La Hague site.

3 And some of it is also dictated by the
4 regulations in France. The regulations don't sit
5 still for 20, 30, 40 years. They change basically
6 about every four years, always looking for
7 improvement. So, you know, we might meet a milestone
8 -- that milestone is never fixed. You know, it
9 changes, it gets tighter as time passes.

10 MS. JUCKETT: Jim, do you have anything on
11 that?

12 MR. LIEBERMAN: No, I don't really have
13 any knowledge or experience in this area.

14 MS. JUCKETT: Okay. Let me also ask about
15 -- just for the NRC folks -- how technology might play
16 into the ETR. Are there any specifics that will be
17 included or that will be specifically excluded to make
18 it more of a technology neutral type of consideration?

19 MR. LEE: I don't know if it's been
20 mentioned previously, but I believe it was the
21 Advisory Committee on Reactor Safeguards put together
22 a literature review in the last three years that
23 examined past experience in reprocessing. And it was
24 prepared by, among others, Alan Croft [phonetic] and
25 Ray Weimer [phonetic], guys that I believe had

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1 actually done -- had been involved in reprocessing.

2 So I think that would be a data point --
3 not necessarily the starting point, but a data point
4 that any ETR could rely on as to conceptualizing or
5 bounding, if you will, what might be included in the
6 topical report as kind of a generic or a case study.

7 MR. MCCULLUM: Was that [indiscernible]?

8 MR. LEE: I'm going to claim a senior
9 moment. I don't know if it was the ACRS or the ACNW
10 [indiscernible]. It could have been the latter.

11 But, anyway, if you go to the ACRS
12 website, and I believe if you scratch around you'll be
13 able to find it. If anyone wants the number, when I
14 get back to Washington I'd be -- if you contact me I'd
15 be happy to bird dog that.

16 MALE VOICE: It's Nureg 1909.

17 MR. LEE: There you go.

18 MR. MCCULLUM: Yeah. And I think that is
19 a good reference. Another one I would recommend was -
20 - I kind of hate to say this acronym -- the Global
21 Nuclear Energy Partnership. They did a draft EIS.
22 Now I'm not endorsing GNEP or anything it did when I
23 say that, but there is some work in there that you
24 might want to take advantage of when you look at your
25 ETR.

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1 MS. JUCKETT: Tom, you want to go ahead?

2 MR. HILTZ: Yeah. I just wanted to
3 provide some confidence that both those documents are
4 being used and looked at in considering the
5 environmental topical report. In fact, I think it was
6 sort of the response to the GNEP programmatic
7 environmental impact statement where they received
8 over 14,000 comments. That indicated to us the
9 importance of being forward looking with regard to
10 considering the environmental impact of this potential
11 rulemaking.

12 MS. JUCKETT: Phil.

13 MR. REED: I would also like to follow up
14 on what Mike said. Our advisory committee on nuclear
15 waste and materials also wrote a letter to the
16 Commission in which they talked about this issue and
17 talked about the possibility of looking into new
18 technologies or current technologies that could be
19 used. They also recommended that we look at carbon 14
20 and tritium for 40 CFR 190 type applications.

21 You had asked a question as to how NRC
22 might handle this issue. Well, one way to -- they
23 might do it is to look at the Appendix I ALARA
24 requirement. That's the way we implement EPA's
25 regulations in reactors.

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1 Now, the Appendix I requirement does have
2 a requirement that if you add a piece of equipment you
3 have to show that it reduces the dose I think \$1,000
4 per person ram or \$2,000 per person ram. So every
5 time you add new technology supposedly this could go
6 down and -- and the output limitations would go down.

7 You mentioned the Sandia report. The
8 Sandia report contains some interesting data and
9 information about how these new technologies -- or the
10 different technologies would reduce the effluents
11 based on cost. It has an interesting cost figure in
12 there. So I don't know which way one would go, but
13 this is certainly one approach that could be used.

14 MS. JUCKETT: Thank you. Mike, do you
15 want to go ahead again?

16 MR. LEE: One activity that might be
17 useful is -- being a former ACNW, ACNWM, and ACRS
18 staffer -- there may be some value in engaging the
19 ACRS or one of its subcommittees as part of the
20 development process of the ETR to get their views. I
21 think they have a role statutorily in looking at fuel
22 cycle facilities, and they may have some insights or
23 advice to offer.

24 So that's another resource that could be
25 tapped into at some point in the process. I'm not

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1 sure when or at what point it might be useful to do
2 so. But I recall conversations in the hall that there
3 was some interest at the committee level on this
4 effort.

5 MS. JUCKETT: Okay. Great. Tom, I want
6 to go ahead get yours and then, Don, are you ready to
7 jump into your comment?

8 MR. HILTZ: I was just thinking a little
9 more deeply about this sort of concept of neutrality
10 in an environmental impact statement. And I think
11 there are some important differences in implementing
12 that and -- as opposed to a regulation where you might
13 establish performance requirements that cover a broad
14 range of technologies.

15 I think in actually considering an
16 environmental impact you have to understand the
17 processes and consider the environmental impacts
18 associated with the processes. So, I mean, I think
19 it's -- it may not be as easy to bound it. You may
20 have to -- it may be substantial more work in
21 developing a draft environmental impact to consider a
22 broad range of technologies, fuel cycles, reprocessing
23 than it might be to develop a technology neutral
24 regulation where you look at developing certain
25 performance criteria that may or may not be applicable

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1 depending on the type of processes.

2 I just throw that out. That's sort of
3 spit balling here. But I do think that there's
4 probably a fairly substantial difference and I wish I
5 was more of an expert in the environmental impact to
6 articulate it more clearly.

7 MS. JUCKETT: Okay. Rod, do you want to
8 go ahead and respond to that?

9 MR. MCCULLUM: Yeah. I think that I agree
10 that that is challenging, and I also agree that you
11 can't simply in an ETR or EIS envelope all the
12 potential technologies.

13 But I do think you can be technology
14 neutral by breaking it down into different scenarios.

15 I mean, EISs traditionally look at different options
16 and different alternatives.

17 You can construct scenarios to represent
18 the various technologies and look at the environmental
19 impacts of those. And I think the ETR would be
20 helpful in drawing out in some of the scenarios where
21 there might be gaps in the information that we need to
22 look at filling.

23 One document I would recommend in that
24 regard -- there was a 2006 -- and I'll try not to
25 speak in acronyms here -- it's the Nuclear Energy

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1 Agency of the Organization of Economic Cooperation and
2 Development of the United Nations. It laid out
3 material balance flows for a number -- about a dozen
4 different recycling schemes and a lot of different
5 information on, you know, what some of the effects of
6 those would be postulated.

7 I think you could go to those and find two
8 or three of those -- or how ever many was necessary --
9 of those schemes and make those scenarios in an ETR or
10 an EIS that could then represent the various
11 technology alternatives that we might pursue. And
12 then you could have a -- if not completely technology
13 neutral, a technology encompassing EIS then.

14 MS. JUCKETT: And I think that's part of
15 what I was actually trying to ask before too -- is
16 whether or not an ETR would include various scenarios
17 -- would it go into the level of detail to include
18 various scenarios as far as outputs based on what
19 processes would be considered and how many different
20 processes would be considered and whether it would
21 consider where the sites would be on a broad sense or
22 no? Okay. Don, are you ready to go ahead and make
23 your comments?

24 MR. HANCOCK: Well, the very last thing
25 ties into one of the things I was going to ask about.

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1 The slide 3 talked about things that the ETR was
2 going to discuss, including description of potential
3 facilities and interactions with the environment.

4 It seems to me facilities and potential
5 sites go together. But I want to -- or could go
6 together -- need to be discussed. And I wanted to get
7 some understanding of how that was going to be
8 included.

9 The GNEP have been referred to a couple of
10 times. And among the things that document was doing
11 was looking at possible sites. So I think that's
12 important.

13 I think also in that regard there needs to
14 be some discussion of sites with existing
15 contamination versus sites that don't have. And to
16 just spill out that concern we've been concerned in
17 New Mexico about how at a contaminated uranium site
18 the NRC was willing to consider the level of
19 contamination at the existing site as being
20 background, which is totally unsatisfactory from a lot
21 of standpoints. And we're very interested in knowing
22 early on if that's how NRC plans to consider
23 reprocessing as well.

24 So, you know, those issues need to be, you
25 know, identified and discussed. And, you know, I

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1 would argue as much as possible some of those issues -
2 - or those kinds of issues need to be dealt with in
3 the ETR. And it wasn't clear to me from what Wendy
4 said in her slide as to whether those kinds of things
5 were intended to be included or were not intended to
6 be included. So I'd like to get some clarity about
7 that.

8 MS. JUCKETT: Is there an NRC response to
9 what might or might not be included as far as
10 background based on what is previously existed,
11 whether natural or unnatural?

12 MS. REED: Right now the ETR is in very
13 early stages. And so as to the kind of sites, the
14 kind of considerations that would be included I don't
15 think I can comment on that. But I think that is --
16 that's a very useful point that Don made is on
17 something to think about the use of existing
18 contaminated sites.

19 MS. JUCKETT: And I'm assuming that by use
20 of contaminated sites you're -- Don, you're wanting to
21 have it considered not as background.

22 MR. HANCOCK: Well, of course, that would
23 be my preference, but I don't know that that's the
24 industry's preference. They can, you know, speak to
25 that themselves.

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1 I think there are fundamentally -- I think
2 there are a lot of issues that come up when you're
3 talking about using an already contaminated, already
4 licensed site versus a new site.

5 And in the GNEP context -- to go back to
6 that, you know, there were a variety of sites that
7 were analyzed at some level. Some of them were sites
8 that had never been used or were, you know, quote,
9 pristine sites, and some of them were not. And so --
10 I mean, that issue is already on the table from the
11 public standpoint and from, you know, that whole
12 process which has been referred to here.

13 So I think the ETR needs to, you know,
14 deal with that issue in some way. And I would -- I
15 believe it does need to be dealt with in the ETR, so
16 that's why I was asking where it was. And the
17 response I've heard so far is you're in an early stage
18 so you don't know. So I guess I want to encourage
19 that point.

20 And sort of related to that and so far as
21 the industry has views about those issues -- sites on
22 the one hand and then sites that have already
23 contamination versus sites that haven't in terms of
24 what their -- the range of thinking they might have
25 about those things. That would be helpful to have

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1 identified early on in the process, whether --
2 hopefully in the ETR, but at any case in some near
3 term time frame.

4 MS. JUCKETT: I think that's a really good
5 message for NRC to be able to take back and consider.

6 Jim, you've had your card up for a while. Let me get
7 your comments.

8 MR. LIEBERMAN: I want to raise an issue
9 that I know will be controversial. Again, I'm
10 speaking for myself --

11 MS. JUCKETT: Go ahead.

12 MR. LIEBERMAN: -- and not for NEI. But
13 the real issue is what type environment review do you
14 really need for a performance based rulemaking. Part
15 20, which has a lot of safety implications, a lot of
16 importance did not have an EIS.

17 The license termination rule restrictive
18 release -- the restrictive release portion of that
19 rule did not have an EIS. The reason why it didn't
20 have an EIS was because the restricted release was a
21 performance based standard. NRC didn't know how it
22 would be used. And each individual application of the
23 license termination rule with a restricted release
24 would need an EIS. And then you consider the impacts
25 of the particular site.

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1 Here we're talking about reprocessing
2 where we're going to have, maybe two -- but we're
3 certainly not going to have a lot of these facilities.

4 And each facility will be unique at a particular site
5 with a particular background. Whether it's going to
6 be a land site or an ocean site or wherever the site
7 would be will have unique impacts. And
8 [indiscernible] will have to need an EIS for that
9 particular site to consider all the impacts and comply
10 with NEPA.

11 So I think it's very hard to do this
12 generically because you don't know what the designs
13 are going to be, you don't know what the releases will
14 be. So I question how much environmental review you
15 need at the front end and whether it's better served
16 doing the environmental review when you have an actual
17 design and location in hand.

18 MS. JUCKETT: Anyone have a response for
19 that? Go ahead, Don.

20 MR. HANCOCK: I think the flip side of the
21 concern that I have in response to that is that we've
22 been told over and over in the last two days what the
23 process is to get to the Commission to decide whether
24 there is going to be a rulemaking or not.

25 And if you're not going to include in that

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1 discussion for the Commission, you know, some of these
2 what I consider to be pretty fundamental issues in
3 terms of siting and that sort of thing I don't think
4 you've really adequately teed up for the Commission
5 what's -- you know, what's involved.

6 And so on the one hand I hear your concern
7 of, you know, you don't know everything there is to
8 know. But I think that needs to be clearly conveyed.

9 And, two, I think needs to be conveyed what some of
10 the issues that probably do need to be known before
11 you can effectively go forward with the rulemaking.

12 So, I mean, there's clearly a balance --
13 we've used the balance term a lot back and forth. But
14 from my standpoint -- and I think from other people's
15 standpoint -- the Commission can't be making a
16 rulemaking decision in a vacuum of, you know -- to --
17 you know, industry -- some of the industry wants to do
18 this and so here are the resources to do it, so let's
19 do it.

20 It goes back to some of the concerns I
21 voiced yesterday about what the balance are in terms
22 of resources generally. But if there's -- if there is
23 going to proceeding -- proceeding with the rulemaking
24 will be perceived a pretty major activity on the part
25 of the Commission. And I want to kind of emphasize to

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1 staff -- if the industry doesn't want to hear it, at
2 least to the staff -- I want the staff to understand
3 that that decision itself can be very controversial
4 and the Commission -- the ETR and other things leading
5 up to that need to convey kind of that range of
6 concerns that people have.

7 MS. JUCKETT: So it sounds like on the one
8 hand, Jim, you're saying that there's not enough
9 detail to go into it when you don't have all the site
10 specifics and you don't have the technology in place.

11 And on the other hand it's hard to make a rulemaking
12 without having any kind of information in a vacuum, so
13 to speak.

14 MR. LIEBERMAN: Yeah. I didn't want to
15 imply you don't do any environmental review. You have
16 -- certainly have to do an environmental review, but
17 the degree of detail might not be an EIS -- it might
18 be an environmental assessment.

19 You clearly have to have appropriate
20 environmental review to be able to consider the
21 impacts of what you're doing. But how far you go down
22 that -- I mean, NEPA has various stages. How far you
23 go down that pike I just want to throw out the
24 question.

25 MR. HANCOCK: But a fundamental place that

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1 you start with NEPA is what's called scoping. So, you
2 know, you and I and whoever else here can't be
3 deciding the scope here. That's a public process too.

4 And on that -- you know, that needs to be started
5 very early.

6 But so -- but just so we're not confusing
7 two things -- I mean, on the one hand we're talking
8 about the ETR, which is a near-term thing. On the
9 other hand the EIS process itself is, you know,
10 somewhere farther down the line related to going
11 forward with the rulemaking. And I'm concerned about
12 both of them.

13 But in the near term -- and my most recent
14 comments were related to making sure that the ETR is
15 not so, quote, truncated -- my word, not the staff's
16 word -- that it really doesn't provide adequate
17 information for the Commission.

18 MS. JUCKETT: Okay. Let me get Rod's
19 comments on that.

20 MR. MCCULLUM: Yeah. I want to point out
21 that while I find Jim's proposal intriguing -- as he
22 mentioned it was a Jim Lieberman proposal -- industry
23 has not formulated a position on this.

24 And what industry's position is that, you
25 know, whatever is done here will be done in full

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1 compliance with environmental law. We do that at all
2 of our plants and all of our facilities.

3 Now, the environmental law in question
4 here is, of course, NEPA. And this also goes, Don, to
5 your question about contaminated sites as well. I
6 mean, we need to do what NEPA requires for those sorts
7 of things.

8 The purpose of NEPA is to inform decision
9 makers of the environmental aspects of their actions.

10 And in this case the decision makers are the Nuclear
11 Regulatory Commission in the case of this rulemaking.

12 So it makes sense that we want to comply with NEPA in
13 making sure that the proper information is put
14 forward.

15 I think this goes to my previous comment.

16 This is another reason why public comment on the ETR
17 would be useful. I think that in the ETR NRC could
18 lay out its approach for complying with environmental
19 law in this case. And I think the reaction that you
20 would get, both from stakeholders such as Don and from
21 the various parts of the industry, would be valuable
22 in making sure that you do comply with NEPA going
23 forward in a way that's instructive to everybody.

24 MS. JUCKETT: We'll go ahead and go to
25 Tom.

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1 MR. HILTZ: I just wanted to emphasize a
2 couple of points. Number one is that no final
3 decision has been made with regard to what form the
4 environmental review will take. The staff's initial
5 view is that this is -- this will be a major federal
6 action. And, therefore, we are doing the preparatory
7 work to potentially support that action if rulemaking
8 is approved.

9 And the decision about whether it's a
10 major federal action will be made between the staff
11 and the consultation with OGC, at least in the
12 recommendation that goes up to the Commission -- OGC
13 is their Office of General Counsel -- or their
14 lawyers.

15 The second point I want to make is no
16 matter what form the environmental assessment takes
17 the ETR will be positioned to support the NRC's review
18 of that. So if in the long run it's determined not to
19 be an EIS then the ETR will end up supporting an
20 environmental assessment that will comply with the
21 NEPA, but above all will do what we need to comply
22 with NEPA with regard to the potential for the
23 proposed rulemaking.

24 MS. JUCKETT: Okay. Thanks. Anybody else
25 have a comment on that? I promised I would try to

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1 keep this to a -- the time allotted so that everybody
2 could kind of get out on time.

3 So before we finish up with this
4 particular session I wanted to know if anybody had any
5 comments that they wanted to make about any of the
6 discussion points and open it up a little bit for
7 whatever has been heretofore off topic but -- about
8 the ALARA or about the 40 CFR 190 limits or anything
9 like that. (No response.) We are ready to go. Sven
10 does. Okay. Go ahead, Sven.

11 MR. BADER: I can't leave 40 CFR 190
12 alone. I know EPA is not represented here, but from
13 the technical basis that I believe Nate here is a
14 principal author it's clear the regulation needs to be
15 revised.

16 Again, we need from an industry standpoint
17 be able to tailor our waste streams to meet all the
18 regulations and to optimize them to minimize cost and
19 do our business development. And I think it's really
20 imperative that we get EPA on board here to start
21 moving forward with this regulation.

22 I know there's some naysayers to this
23 because there's some elements -- or some radioisotopes
24 that are not up here that I think Beatrice noticed.
25 Notably carbon 14 is not up there.

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1 As an industry we want to know are there
2 going to be limits on these that we need to be able to
3 design for. We talk about future technologies. There
4 are trade-offs with future technologies.

5 Krypton's a good example. You can put on
6 a very, very expensive system. But it comes with its
7 own problems. It's a potential explosion hazard.
8 You've got krypton stored in some kind of container
9 that we need to design and probably prevent a mass
10 release of krypton from certain events -- seismic
11 being a good example.

12 So -- and then the other point I'd like to
13 make is that if -- the slides you had up there -- you
14 probably noticed this curie per gigawatt electric
15 year. It'd be really nice if there was an industry
16 standard put up there. A dose number is really what
17 we're looking for as opposed to these peculiar units.

18 So I'll leave it at that.

19 MS. JUCKETT: Okay. Thanks. NRC want to
20 make any comments? Go ahead, Marissa.

21 MS. BAILEY: I guess I would recommend
22 that the industry and DOE engage EPA. We have engaged
23 EPA, but ultimately our job as regulators are to -- is
24 to implement the [indiscernible] regulations.

25 MS. JUCKETT: I don't see any other cards

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1 up. It's on the agenda to go ahead and go to public
2 comment. Are there any comments from the observers on
3 this topic? (No response.) Okay. I'm going to hand
4 it back over to Chip to wrap up.

5 MR. CAMERON: Thank you, Miriam. Well
6 done. I'll -- this is an opportunity right now for
7 each of you around the table to make any closing
8 comments that you want about the workshop, the
9 process, the rulemaking.

10 And we also want to hear after that from
11 Lawrence Kokajko who is going to be taking over the
12 management of this particular rulemaking after his
13 success in the high-level waste program. (Laughter.)

14 I'm sorry. Sorry, Lawrence. I couldn't let that go.

15 But, anyway --

16 MR. MCCULLUM: Chip, in all seriousness I
17 think it was a success. I mean, whatever external
18 forces have interrupted his success, if you look at
19 where the process was, the regulation that was
20 written, the guidance, the review plan, the review
21 process, the RAIs -- there's a lot of positive lessons
22 that the whole rest of the agency can learn from the
23 way that process was conducted.

24 MR. CAMERON: And that is well noted.
25 Thank you, Rod. Very, very, very good point. And I

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1 shouldn't let my joy in giving Lawrence a hard time
2 result in a facetious remark like that. So thank you
3 very much for that. And, James, do you want to start
4 us off?

5 MR. ROSS: Yeah. In the spirit of having
6 a closing comment, we did talk a lot about the
7 technology neutrality of any new regulations. I just
8 want to reemphasize that we really support that. When
9 the Nureg do come out don't be surprised to see G.E.
10 hold pretty firm on that position.

11 We think we need to stay consistent with
12 Part 50 in the way we've done things with fuel
13 facilities and with enrichment facilities. So I just
14 wanted to make sure reemphasize that point from our
15 perspective.

16 MR. CAMERON: Great. Thank you, James.
17 Why don't we go this way and we'll come back to Tom
18 and then finish up with Marissa. Robert, anything --
19 well, we'll go to Jim. But, Robert, anything that
20 you'd like to say to us?

21 MR. HOGG: Yeah. I guess I held off on
22 the last couple of sessions of discussion in
23 preparation for really wanting to say one thing
24 succinctly at the end of this.

25 And that is, you know, we can choose to

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1 lead or we can choose to follow. We can lead in
2 environmental protection or we can follow in
3 environmental protection. We can lead in technology
4 development or we can follow in technology
5 development. We can lead in regulation or we can
6 follow in regulation. And there are many other things
7 we can lead in or we can follow.

8 I would envision -- or like to believe
9 that this group of people and others -- many, many
10 others involved in the technology, control of the
11 technology, the observation and participation of this
12 technology would like to be leaders.

13 MR. CAMERON: Okay. Thank you. Jim?

14 MR. LIEBERMAN: I think I've spoken enough
15 today. I don't really have any further comments.

16 MR. CAMERON: Okay. And Anne.

17 MS. CLARK: My comment is sort of slightly
18 off topic. But it's just in the broader scope of
19 things from a state point of view that the states are
20 most concerned about collaboration with their public's
21 concern. And that in my particular program has been
22 manifested in the development of a comprehensive set
23 of standards that the Department of Energy agreed to
24 in transporting waste to the waste isolation pilot
25 plant.

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1 But that kind of collaboration can look
2 like -- can apply to anything. And that's what we
3 push for through our regional groups like the Western
4 Governor's Association -- is to make sure that the
5 federal government is reaching out to the states and
6 asking what their concerns are and asking what do
7 their -- what does their citizenry need.

8 MR. CAMERON: Good point. Collaboration.
9 And, Beatrice?

10 MS. BRAILSFORD: I guess I am -- I have
11 been struck by and am concerned by the level of which
12 there is an expectation that this process will be more
13 responsive to industry than I think might be wise.

14 MR. CAMERON: Okay. And, Don? Thank you,
15 Beatrice. Don?

16 MR. HANCOCK: In one sense I want to end
17 up where I started yesterday. And from my standpoint,
18 and I think from other folks in New Mexico's
19 standpoint, we're not interested in participating for
20 the purpose of participating. We're interested in
21 participating to be heard and responded to.

22 That doesn't mean everybody's going to
23 agree but that our concerns, in fact, be taken very
24 seriously. And, as I pointed out yesterday, there are
25 concerns that we have about both the NRC's track

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1 record and the industry's track record.

2 And so going forward we're -- we
3 appreciate the fact that you've used this format and
4 so that folks can be engaged, but engagement doesn't
5 necessarily equal the kind of responsiveness that we
6 haven't seen historically and need to see in this
7 process.

8 MR. CAMERON: That's true. Thank you,
9 Don. Sven?

10 MR. BADER: I have to profess I'm a little
11 disappointed that I didn't hear Rod say risk based
12 performance -- risk informed performance based about
13 20 times during this meeting.

14 But from an AREVA standpoint, yeah, we're
15 clearly interested in moving forward with
16 reprocessing/recycling in different parts of the
17 world, including the United States.

18 And to come up with a viable business
19 model we need to have regulatory stability. I think
20 that's really what we're striving for here. And I
21 understand the task is daunting, but if we could
22 accelerate the task, you know, AREVA would appreciate
23 it. And I understand that most of this is contingent
24 on what the Blue Ribbon Commission is going to come up
25 with. You know, I'd be really interested to see what

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1 they come out with in the end.

2 But from AREVA's standpoint we think that
3 they will not find against recycling and that might
4 give us an avenue with the current problems with final
5 disposal to deal with some of the wastes that are
6 available for recycling.

7 MR. CAMERON: Okay. Thank you. Thank
8 you, Sven. And, Rex, thank you for coming all the way
9 from the northeast Atlantic.

10 MR. STRONG: Well, thank you for that
11 comment. I mean, I have been interested and I think
12 genuinely impressed by the level of discussion that's
13 been going on around the room.

14 One point that you might want to consider
15 for a continuation of this process -- I mean, this is
16 a large room and there are quite a large number of
17 empty seats out there. So I am just left wondering
18 what other contributions could have been made to this
19 debate which would have left us all better informed
20 that, in fact, we are.

21 MR. CAMERON: Thank you. And a good
22 point. Rod.

23 MR. MCCULLUM: I want to thank the NRC for
24 holding this forum. I learned a lot, as I did learn a
25 lot from the workshop that was held in Washington.

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1 One of the things I learned in this one
2 was that if you give me my very own microphone -- you
3 notice I didn't have to share and everybody else did -
4 - I talk way too much.

5 And I don't want that to convey the notice
6 that perhaps industry is too much driving this
7 process. We know very well of NRC's independence and
8 we know that you've taken a lot of steps which we
9 agree are important -- but they're steps that you are
10 making decisions to take.

11 I want to emphasize that this is --
12 whether it's a good thing or a bad thing -- that we
13 got this point as a nation. It's a tremendous
14 opportunity we have before us.

15 Now is the time to put the regulatory
16 framework for this in place before the policy
17 decisions get made so those decisions can be informed
18 with a knowledge of what it's going to take to make
19 this safe.

20 And I learned a lot in these forums from
21 both. In Washington we had one group of activists and
22 we had another group here, and I think maybe some
23 other seats need to be filled too. But I think we all
24 have in common the goal -- the one thing we can all
25 agree on is we want to flip the light switch, have the

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1 lights come on, and be assured that whatever's at the
2 other end of those wires is safe.

3 And we are learning that -- how we use our
4 world's resources is an important component of safety.

5 And maybe things that don't use resources wisely and
6 warm the planet may not be safe. Indeed, recycling is
7 an aspect potentially of how we use our nuclear
8 resources more wisely.

9 So I urge -- I like everything I hear here
10 in terms of that NRC is moving forward to take
11 advantage of this opportunity. I think there need to
12 be more meetings. There need to be some detailed
13 discussions, and I think we flagged those things here.

14 I would encourage those discussions to be
15 open to as wide an audience as possible and look
16 forward the dialogue continuing -- look forward to
17 this rule coming out so that we can make these
18 important decisions.

19 MR. CAMERON: Thank you. And thank you
20 for all the things also. Mike?

21 MR. LEE: Present.

22 MR. CAMERON: All right. Is that --
23 that's good enough. Okay. Wendy -- and thank you for
24 your presentation on the environmental part. That was
25 really -- that was terrific.

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1 MR. LEE: Not to be flip though, the
2 conversation was good today. It kind of reaffirmed
3 some things that we were already thinking about in
4 terms of this Commission paper that's due to the
5 Commission in December. So we just, of course, have
6 to let that process work itself out and --

7 MR. CAMERON: Good. Good. Wendy,
8 anything?

9 MS. REED: I was just going to say thanks
10 for -- everyone for attending. There's been a lot of
11 good discussion over the last two days, and I think
12 there's a lot of information that the working group
13 take back and help with their deliberations about the
14 technical basis document.

15 MR. CAMERON: And, Phil.

16 MR. REED: I would like to say the same
17 thing. Thanks very much for the people that came and
18 thanks very much for the suggestions and comments and
19 recommendations that were made. I think many of these
20 are very useful for us and we'll take them back,
21 discuss them, and you might see them again in the
22 technical basis document.

23 MR. CAMERON: Good. Tom?

24 MR. HILTZ: Thank you, Chip. Certainly
25 want to associate myself with all the folks who have

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1 thanked the members who have come out here today. I
2 want to thank the staff and our panel members. I
3 particularly want to thank you, Chip, Miriam, Jose,
4 Jeanette, Carol, who's been vigilant back there
5 transcribing, and Alex Murray who could not make it
6 here but put a lot of effort into planning and
7 preparing for this workshop.

8 At the risk of, you know, incurring some
9 angst among folks I think there's a tendency at least
10 in this meeting and in the meeting in Rockville that
11 we all think we have good discussions -- and we do
12 have good discussion. But they never seem to be
13 punctuated with a final conclusion.

14 So I wanted to go through and list some of
15 the things that I took away as I believe consensus
16 points that hopefully capture at least my -- well, I
17 know they capture my understanding and hopefully
18 capture the group's understanding.

19 With regard to the regulatory framework I
20 heard a lot of support for Part 7X. I heard -- did
21 not hear any concerns about moving forward with a
22 separate Part 7X. And, conversely, I did not hear a
23 lot of support for revising Part 50 or revising Part
24 70.

25 I think there was -- or perceived there

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1 was a consensus of moving forward with a risk informed
2 performance based approach. I think that there's much
3 more discussion that probably needs to happen with
4 regard to technology neutral, particularly being
5 sensitive to our stakeholders -- all our stakeholders
6 in understanding that.

7 And that may just be a better articulation
8 about what the benefits are -- better articulation
9 about what we mean and how we're going to implement a
10 technology neutral framework.

11 We talked about one step licensing. I
12 think there was support for having the flexibility in
13 the regulations to do both a one step and two step
14 licensing. While we didn't get to detailed discussion
15 about whether we should have a license that licenses a
16 reprocessing facility in total which might mean
17 storage, reprocessing, fuel fabrication -- I think I
18 heard some comments from Don particularly later on
19 that licensing all those things at once maybe provide
20 more coherence and more stability in the process
21 rather than trying to piecemeal it.

22 With regard to whether we should have a
23 revised Commission safety goal I did not hear any
24 overwhelming support for interacting with the
25 Commission on another safety goal -- or no basis for

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1 why we might need to do that.

2 As far as the appropriate approach between
3 quantitative and qualitative I perceive the consensus
4 to be that there needs to be a mix -- and some folks
5 use the word semi-quantitative -- mix taking those
6 aspects of PRA that are appropriate for a reprocessing
7 facility and mixing the best of the ISA and PRA for
8 reprocessing facilities.

9 And we had the question about, you know,
10 does -- will we apply the Commission's PRA policy
11 statement -- and I think I heard the answer to that
12 was, yes, if we do that and we consider the best use
13 in the state of the art and what's practical then we
14 will meet the intent of the Commission's policy
15 statement related to probable realistic risk
16 assessment.

17 With regard to the operational
18 requirements for reprocessing, I think I heard
19 consensus that we certainly need to have a minimum
20 [indiscernible] of generic design or criteria or
21 baseline design criteria. I think we again heard the
22 advocacy from some of the stakeholders to provide the
23 flexibility in those baseline design criteria to
24 accommodate a range of technologies.

25 On licensing -- operator licensing I think

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1 we heard that although Part 55 is not directly
2 applicable that there are aspects of Part 55 that we
3 need to consider with regard to the industry role in
4 training and certifying its operators and how the NRC
5 might actually issue licenses to a small subset of
6 operators associated with high consequence --
7 potentially high consequence sequences.

8 I was a little unclear about where we
9 landed on cyber security. I thought that it was -- it
10 might not be ripe enough to be included as a baseline
11 design criteria. But I think that more will be
12 developed on that as we proceed in other regulatory
13 fashions with considering cyber security.

14 On the issue of waste management
15 processing I concluded that I need to get smarter on
16 that. I concluded that it's a complicated issue that
17 maybe if people on the staff -- and not that I'm the,
18 you know, 50 percent on the staff -- but if people on
19 the staff have trouble understanding what the issue is
20 I think there's maybe a public outreach associated
21 with that and some additional clarity that we need to
22 do.

23 I think we also really need to frame the
24 issue and scope the issue because I do think that
25 there's a potential for some creep there to solve

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1 other problems while we solve the reprocessing
2 problem.

3 And overall I concluded that the workshop
4 was valuable. And I concluded that it wouldn't have
5 been as successful without all the participation of
6 the panel members. So, again, my thanks for your
7 support and participation.

8 MR. CAMERON: And thank you, Tom. And
9 before we go to Marissa I think we just need to
10 clarify one thing that she said because I think
11 Beatrice sensitized us to this with her remark.

12 When you started out and you were talking
13 about the issue of do we do Part 50 or Part 70 or we
14 do a new regulation you said 7X. And you weren't
15 referring to this particular 7X that the industry had
16 developed. And I just wanted to make that clear.
17 Okay?

18 And I also might add is that we did refer
19 to the NEI 7X a lot. And it wasn't necessarily
20 because of the fact that we were holding that up as
21 something that was the bee's knees so to speak. But
22 it was a straw man on some of the issues that we could
23 use to illuminate some of the issues I think.

24 MR. HILTZ: And thank you, Chip. That's a
25 very important clarification. When I say -- I mean a

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1 new part that would likely fall under 10 CFR Part 7 --
2 whatever the next open number [indiscernible] 70 -- 7Y
3 -- thank you.

4 MR. CAMERON: Okay.

5 MR. HILTZ: And I also want to say that I
6 noted in both Beatrice's and Don's comments that they
7 used the word responsiveness. And I certainly would
8 appreciate perhaps a discussion after this about how
9 we could be more responsive.

10 One of the purposes of having this
11 workshop is that we wanted to broaden the exposure to
12 this topic. We didn't want to just have industry
13 input into it. And so we wanted to try to engage
14 stakeholders. And if you think there things that we
15 still need to do better -- if you think we didn't hit
16 the mark I'd certainly appreciate hearing some of this
17 comments.

18 MR. CAMERON: Thank you, Tom. And
19 Marissa?

20 MS. BAILEY: Ditto on everything that Tom
21 just said. Thank you to everyone that he thanked. I
22 agree with his summary of the conclusions -- or I
23 guess the punctuation that he reached, including that
24 he needs to get smarter.

25 I want to take this opportunity to

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1 apologize to Sven, and I'm sorry that he left for my
2 snarky response to his comments, so let me try again.

3 The NRC has reached out and talked to EPA
4 officials to express to them the concerns that we've
5 heard about the applicability of 40 CFR 190. And they
6 are very early in the process as far as us looking at
7 that regulation. And certainly the NRC -- if EPA does
8 decide to go that path and change the regulations the
9 NRC will engage them and give them our perspective on
10 that rule.

11 But ultimately we will implement the rule
12 -- the applicable rules that EPA promulgates. And I
13 think that's what I was trying to say and I just had
14 to say it more diplomatically.

15 In response to Beatrice's comments and
16 also Don's about our responsiveness, I hope that in
17 this process we are responsive to all of our
18 stakeholders, not just the industry stakeholders. And
19 so, like Tom, I would certainly welcome any feedback
20 as far as how we could be more responsive to all of
21 our stakeholders.

22 And, finally, I just want to repeat NRC's
23 role in this process in reprocessing. We are not
24 advocates for reprocessing. We don't have a position
25 for or against reprocessing. Our role is to make sure

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1 that if there is a license application for
2 reprocessing, if that is the direction that the nation
3 wants to go, that we can review an application, we
4 have a regulatory framework that's stable and that's
5 predictable, and that is adequately protective of
6 public health and safety. And that's the -- that's
7 our job. That's where we want to go. And I think
8 I'll end it at that.

9 MR. CAMERON: Thank you very much,
10 Marissa. And now we're going to hear from Lawrence.
11 And do you want to use this or -- go ahead.

12 MR. KOKAJKO: Good afternoon. And I have
13 three general sets of comments. And the first one is,
14 as I am assuming this project I'd like to thank
15 Marissa Bailey, Tom Hiltz for the extraordinary job
16 that you guys have done in managing their project to
17 date and effectively managing it in such a way that
18 it's going to be effectively transitioned to my team
19 and Jack Guttman [phonetic]. We're going to be
20 talking about planning to continue this effort and
21 build on these successes. So I look forward to
22 working with you and Jack Davis on that.

23 The second thing I'd like to say is I'd
24 like to thank the panelists, particularly those who
25 have had to travel from a long distance to be here. I

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1 know that it can be challenging to be on a panel like
2 this with a free and open exchange, and I want to let
3 you know that I do appreciate your efforts in that
4 regard.

5 And, finally, I'd like to thank the
6 incomparable facilitator Chip Cameron and, of course,
7 his sidekick Miriam Juckett here.

8 In terms of the -- dealing with some of
9 the issues and that Tom Hiltz I think summarized very
10 adequately I'd like to restate a couple of things.
11 One is that policy is evolving at the national level
12 and we are actively monitoring the BRC, as I had
13 mentioned earlier.

14 And my division feels that we have to do
15 some type of prudent preparation for whatever comes to
16 pass. We have been doing that with my two deputies,
17 Jack Davis and Abby Mohseni [indiscernible]. We
18 believe we are staged to handle any of the activities
19 that could come out of the BRC.

20 I believe, by the way, in a very strong
21 and independent regulator. And I believe this is --
22 this preparation is essential to our success. And
23 part of that independence means that we are not unduly
24 swayed by any particular group or thing or process.

25 And one way that I think we can achieve

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1 that is having real stakeholder involvement and
2 hearing from all sides. And so, Beatrice and Dan, I
3 appreciate your being here and working with us over
4 this past two days. And also to Anne as well -- thank
5 you.

6 The second point I wanted to say is that,
7 you know, I'm sort of relatively new to the concept of
8 technology neutral. I know it's been around a while,
9 but I've really never had to deal with it before.

10 And conceptually I sort of align with the
11 idea. However, one thing I align more strongly with
12 is a real risk informed performance based framework.
13 And performance based in particular I have found to be
14 very helpful because it's outcome focus and it's
15 focused on those boundary conditions that said this is
16 where the line is drawn -- this is what the safety is
17 all about. And I like that approach. And I've
18 actually had some experience implementing it of late.

19 And one thing that I would like to point
20 out is that we do value public involvement. We do
21 value stakeholder involvement because stakeholders --
22 all stakeholders could help us to define those
23 boundary conditions. And so I look forward to helping
24 to define these boundary conditions for this as time
25 progresses.

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1 Similarly, someone had made a point about
2 PRA could lead to false confidence. I don't know who
3 said that. I do believe that's true too, but any use
4 of any risk tool can lead to false confidence. And
5 that's why the PRA is risk informed, not risk based.
6 And I believe this is again a prudent regulatory
7 strategy.

8 The third substantive comment I'd like to
9 state is that I do believe in the use of risk tools.
10 I believe they are a central element to our
11 understanding of the processes and how things should
12 work.

13 And I don't know agree if PRA is the
14 approach or semi-quantitative ISAs or maybe a modified
15 version of a performance assessment strategy that
16 we've employed in the repository program. I'm not
17 sure which is the best right now. And I am familiar
18 with ISAs in terms of Part 70.

19 But I think is another thing that we can
20 work together to try to achieve some type of
21 successful outcome for the benefit of the technical
22 basis, the proposed rule, and anything else. Again,
23 to prepare for whatever future may come.

24 And the third and final thing I'd like to
25 say is I look forward to this unique challenge. I

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1 look forward to working with everyone. And I look
2 forward to a successful outcome. Thank you.

3 MR. CAMERON: Thanks, Lawrence. And there
4 are the infamous feedback forms which are basically if
5 you have any comments on how the NRC can improve the
6 meetings please offer those to us. And you can send
7 them back in -- they're franked -- by mail or you can
8 leave them here. But thank you all very much.

9 (Whereupon, at 5:05 p.m., the meeting was
10 concluded.)

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