

BLUE RIBBON COMMISSION ON AMERICA'S

NUCLEAR FUTURE

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DISPOSAL SUBCOMMITTEE

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MEETING

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WEDNESDAY

JULY 7, 2010

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The Subcommittee convened at 8:00

a.m. in Salons D and E at the Washington
Marriott Hotel, Metro Center, 775 12th Street,
Northwest, Washington, D.C., Chuck Hagel and
Jonathan Lash, Co-Chairs, presiding.

MEMBERS PRESENT:

CHUCK HAGEL, Co-Chair
JONATHAN LASH, Co-Chair
MARK AYERS

VICKY BAILEY
PETE DOMENICI
SUSAN EISENHOWER
ALLISON MacFARLANE
PER PETERSON
JOHN ROWE

ALSO PRESENT:

TIM FRAZIER, Designated Federal
Official
CHRIS WHIPPLE, Environ
JIM WILLIAMS, Western Governors'
Association

BRUCE BRESLOW, Nevada Agency for
Nuclear Projects
DARRELL LACY, Nye County Nuclear Waste
Repository Project Office
JOHN GERVERS, consultant to the Clark
County Nuclear Waste Division
MIKE BAUGHMAN, consultant to the
Lincoln County Commission
JUDY TREICHEL, Nevada Nuclear Waste
Task Force
SECRETARY RON CURRY, New Mexico
Environment Department
STATE REPRESENTATIVE JOHN HEATON, New
Mexico
LOKESH CHATURVEDI, formerly of the
Environmental Evaluation Group
DON HANCOCK, Southwest Research and
Information Center
PETER SWIFT, Sandia National
Laboratories
FRANK PARKER, Vanderbilt University
LIZ DOWDESWELL, Council of Canadian
Academies
DAN METLAY, Nuclear Waste Technical
Review Board

ALSO PRESENT(Cont'd):

BRIAN O'CONNELL, National Association

of Regulatory Utility

Commissioners

STEVE FRISHMAN, consultant to the

State of Nevada

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

8:02 a.m.

MR. FRAZIER: Welcome, everyone.

My name is Tim Frazier. I am the Designated Federal Officer for the Blue Ribbon Commission on America's Nuclear Future, and therefore, the Designated Federal Officer for everything that falls underneath it, including the Disposal Subcommittee.

So, what I wanted to do was just make a few opening comments and review the agenda very quickly. We are going to start with some opening remarks by Senator Hagel. We will move into the presentations, which are going to be 15 minutes of presentation and then we're going to have 15 minutes in Q/A with the Commissioners.

At 9:45, we will take a quick break. Lunch is at 12:30.

Public comments, public statements will start at 3:00, go about 45 minutes. Then, we will go into a deliberative session

1 at four o'clock, which will be closed.

2 So, with that, Senator Hagel, I'll
3 turn it over to you, sir.

4 CO-CHAIR HAGEL: Jim, thank you.

5 And good morning. On behalf of my
6 Co-Chair Jonathan Lash and members of our
7 Subcommittee as well as the full panel, we
8 welcome you.

9 In particular, we want to thank
10 our witnesses today for their testimony, their
11 insights, and their contributions.

12 I have a prepared statement that I
13 will read on behalf of Jonathan and our
14 Subcommittee. It frames a little bit more of
15 the purpose of the focus of today's session.
16 Then, we will ask any of our members of our
17 Disposal Subcommittee for their comments, if
18 they wish to make any at this point. Then, we
19 will hear from our witnesses. As has been
20 noted by Tim, we will have ample time for
21 questions.

22 I would note at the front end that

1 one of the Co-Chairman of this Commission is,
2 as you all know, Lee Hamilton, who was a
3 Committee Chairman in Congress of the United
4 States. He is quite fond of these little
5 yellow, red, and green lights that go on and
6 off and buzz when you're over your time. So,
7 we will hold very strictly to Chairman
8 Hamilton's setup here, which I also
9 appreciate. It will give everyone at least
10 some sense of where they are, and it's fair,
11 also, because each of you has, we recognize,
12 much to contribute and to say. So we will
13 stay close to those timelines.

14 Now let me quickly dispense with
15 my opening statement, which is short, but it
16 just sets the framework of why we are here
17 this morning and what the work of this
18 Commission is about.

19 This particular Subcommittee is
20 one of three subcommittees on the Commission.
21 The members here today representing our
22 Subcommittee, I think as everyone knows also,

1 are part of the full Commission, and there
2 will be other members, like Senator Domenici,
3 who are not assigned particularly to this
4 Subcommittee, but will be here and certainly
5 are welcome.

6 We formed this Subcommittee to
7 address the matter of how the U.S. can go
8 about establishing one or more disposal sites
9 for high-level nuclear waste in a manner that
10 is technically and politically and socially
11 acceptable.

12 The purpose of this first meeting
13 is to explore three broad questions: is a
14 disposal facility or facilities needed under
15 all foreseeable scenarios? Two, if so, what
16 are our alternative approaches for disposal?
17 And three, what should the process to develop
18 a U.S. disposal system look like?

19 Today we will hear from an
20 impressive collection of experts who can share
21 their experiences and perspectives on nuclear
22 waste disposal projects in the U.S. and

1 abroad.

2 Again, we remind our invited
3 speakers that they are to keep their formal
4 presentation to 10 minutes or less, that the
5 reminder of the allotted time will be spent on
6 questions and a discussion with the
7 Subcommittee members.

8 We appreciate the time and effort
9 the speakers have put into their
10 presentations, and we very much look forward
11 to hearing what they have to say.

12 We are webcasting this meeting, as
13 we have done for all full Commission meetings.
14 We want people who are not able to get to our
15 meeting locations to be able to follow our
16 proceedings. A video archive from this
17 meeting will be posted on the Commission
18 website.

19 At the end of today's session, we
20 will hear from any member of the audience who
21 wishes to speak. We have allowed for an
22 extended public comment period at the end of

1 the meeting, in light of the large number of
2 people who have commented at past meetings.
3 A signup sheet for the public comment period
4 is available now and will be open for signups
5 until noon. Of course, the amount of time
6 allotted to each speaker will depend on the
7 number of people who wish to speak.

8 Finally, we are glad to see we
9 have several members of the media here with us
10 today. Please be informed that we will not be
11 holding a media availability at the conclusion
12 of the meeting.

13 Any questions about the
14 Commission's work should be directed to the
15 Co-Chairmen through John Kotek, the Commission
16 Staff Director. And for those of you who do
17 not know the famous, infamous, the
18 astoundingly competent John Kotek, he used to
19 be, and still is, right behind us here.

20 Of course, you have met Tim
21 Frazier. You will be meeting other members of
22 our staff throughout the day. We are very

1 grateful to them for their continued good work
2 and guidance and leadership.

3 With that, I will now open the
4 floor to other Commissioners who serve on this
5 Disposal Subcommittee for any statement or
6 comment that they wish to make before we hear
7 from our speakers.

8 So, why don't we go around and
9 start with you, Allison, if you have any
10 comments? Okay, Vicky? None? Who else?
11 We'll go over to this side. Any other members
12 of our Commission who would like to
13 contribute?

14 (No response.)

15 All right. Thank you. We're off
16 to a rallying start. That's the first time
17 I've ever chaired like this when we had no
18 comments, but, of course, I picked a lot of
19 bad habits up in the Senate and we're still
20 working through those.

21 (Laughter.)

22 Now let me introduce our first

1 speaker, I hope who is here. Our first
2 speaker is Dr. Chris Whipple -- is that
3 correct? -- of the Environ Corporation. Chris
4 is a well-respected expert in risk assessment
5 and is past member and Chair of the National
6 Academy of Sciences Board on Radioactive Waste
7 Management. Chris will discuss with us the
8 need and the technical options for disposal of
9 high-level nuclear waste.

10 Then we have a series of speakers,
11 as you know. I will introduce each of you as
12 you take your turn at the podium.

13 Obviously, Chris, you are here.

14 MR. WHIPPLE: Yes.

15 CO-CHAIR HAGEL: And we are very,
16 very pleased that you allowed us some time
17 today to be with us. The floor is yours.

18 MR. WHIPPLE: Thank you. I will
19 do my best to keep us ahead of the clock.

20 So, if I can launch in with the
21 first slide, it simply repeats the three
22 questions that Senator Hagel just mentioned

1 that at least I was asked to address; I assume
2 all the speakers were.

3 The next slide, I'll try to dive
4 into what my answers are. Do we need a
5 repository, is the first question. You can
6 see my short answer is we will need one
7 eventually, but I don't think the timing is
8 terribly critical.

9 But I think my answer in part is a
10 reaction to the tailend of the fuel cycle
11 driving the entire nuclear power business over
12 the last five years, particularly the DOE
13 efforts to set up fast burner reactors to
14 dispose of actinides and also reprocessing,
15 which has not proven economic anywhere it has
16 been done.

17 I think if we are going to bring
18 nuclear power back, and I think we need to,
19 given climate change, it is going to be, at
20 least for a while, boiler reactors until we
21 have figured out how to build and burn. The
22 burden of trying to do reprocessing and

1 actinide burning is so economically
2 unattractive, I think it would kill the
3 rebirth of nuclear power. And the priority
4 has to be put in the right place.

5 I note the waste volumes. I guess
6 that is the next slide.

7 But there are some problems that
8 we need to address. I, frankly, am not sure
9 which of these, if any, are in your scope, but
10 I will point them out.

11 One, there is some spent fuel at
12 decommissioned reactor sites. That's a
13 problem, not the least of which is the
14 security requirements for protecting spent
15 fuel are high. They are high for operating
16 power reactors as well. So, if you meet
17 those, you probably meet the security
18 requirements for protecting spent fuel, but
19 that's an economic burden. Some way of moving
20 spent fuel off of closed reactor sites would
21 make sense.

22 The second thing is DOE is

1 converting its tank waste to a vitrified waste
2 form. That needs to continue, whether or not
3 there is a designated long-term repository to
4 accept it. It's simply a much safer waste
5 form and much more easily isolated in the
6 environment.

7 And then the third, which is not
8 in your scope, but I wouldn't be an old-time
9 rad waste person if I didn't note the
10 perpetual lack of disposal options for these
11 other categories of waste.

12 The next slide, please.

13 Alternative approaches to
14 disposal. As you probably heard, in 1957, the
15 U.S. National Academy of Sciences recommended
16 deep geologic disposal as the most sensible
17 option. While there have been grunts by
18 people who would like to build really large
19 accelerators and other gadgets, I don't think
20 the world opinion, and certainly no commercial
21 -- or it's not commercial -- no nuclear
22 country that is working on an active

1 repository program is looking at anything
2 other than the geologic disposal.

3 So, I don't think there's a
4 sensible alternative. Shooting it into the
5 sun is not really a feasible idea. It's been
6 proposed.

7 So, some old old-timers would tell
8 you that they ought to bring back sub-seabed
9 disposal, but I think that is a non-starter
10 politically. Technically, it's probably not
11 awful.

12 So, I hope that frames what you
13 might look at in terms of looking at more than
14 50 years of study and world opinion on this.

15 The next slide, please.

16 About the process, I'm involved
17 with both the WIPP project, Yucca Mountain,
18 and a number of other radiologically-
19 contaminated sites, including tank wastes at
20 Hanford. These are just sort of some
21 observations over that period.

22 First, local support is vital.

1 The city fathers of Carlsbad used to come to
2 DOE about once a month and visit the Secretary
3 and say, "We need the jobs. We're happy to
4 take this place. When are you going to get it
5 open?" It was not that popular in Santa Fe.
6 In the case of WIPP, the local support made
7 the site possible.

8 If you remember sometime, I guess,
9 in the early nineties, maybe late eighties --
10 I am not sure -- David Leroy was the nuclear
11 waste negotiator, and a very capable guy. He
12 went from western state to western state
13 visiting governors, trying to broker a deal
14 with giving the states a lot of leverage in
15 how a site might be designed, built, managed.

16 I can remember a very thoughtful
17 letter from the Governor of Wyoming at the
18 time to David that basically said, "David,
19 you're a fine guy and I trust you, but
20 anything we've reached in Congress can change
21 three years from now. And I don't trust
22 them." The Waste Policy Act has not

1 necessarily been done in a way that is
2 perceived by the states to be fair.

3 The other success story that
4 people look to in the high-level waste
5 disposal business is the progress being made
6 in Finland and Sweden for a repository. And
7 again, they used pretty much a voluntary
8 siting process, a very open process.

9 But the parallels start to fall
10 apart when you look hard. Sweden only has 10
11 million people. They are quite homogeneous.
12 They don't have strong state governments. For
13 all those reasons, the number of hurdles that
14 a siting process has to go through is more
15 limited. With that said, they have done it
16 very well. They've got a nice repository
17 design, and I think they are on course.

18 The next slide. I think I have
19 one more, maybe two more.

20 More lessons learned about the
21 process. In the Waste Policy Act, it set up
22 the process initially to characterize five

1 sites a little bit and select three for full
2 characterization that was subsequently
3 overturned by the direction to go characterize
4 Yucca Mountain.

5 I'm an engineer, and I think that
6 process was written by geologists. The
7 geologists had in their mind the idea that the
8 site does all the heavy lifting and the
9 engineering can be a brown paper bag that
10 holds together until you get the stuff
11 underground.

12 And over 25 years, we've found
13 that is not exactly true. There are
14 radionuclides that are very mobile in the
15 environment and pretty much in most
16 environments. If there is any floating water,
17 they're going to move. They don't stick to
18 much.

19 And for those, you need an
20 engineered canister of some sort designed to
21 have low-corrosion rates in the particular
22 siting that this came for. That was how the

1 Yucca Mountain design evolved over time. It
2 went from a cheap can at the start to a very
3 high-tech, expensive, low-corrosion can in
4 this last iteration.

5 Now WIPP is something of an
6 exception because it is a salt bed where no
7 water flows. But, also, the waste that goes
8 to WIPP, if it's plutonium, it is very sticky
9 and tends not to migrate much in the
10 environment. So, those combination of
11 features make WIPP work well.

12 The next slide, please.

13 A couple more lessons learned. It
14 is remarkable how much money has been spent on
15 developing rad waste sites by people who don't
16 own the land. It seems like an obvious thing
17 to get out of the way, but the low-level waste
18 site that had been planned for Ward Valley,
19 California, and that the California Governor
20 at the time, Pete Wilson, was pushing hard to
21 get it open, but it died when they couldn't
22 get the land transferred from the federal

1 government to the State.

2 The other thing is to recognize
3 that we have an unusual situation with respect
4 to the standard that governs high-level waste
5 disposal. EPA started work on a generic
6 standard back in the mid-seventies. It was
7 used for WIPP. But about the time that WIPP
8 was getting close to opening, Congress
9 directed DOE to fund a National Academy study
10 advising what the Yucca Mountain standard
11 should be. I was on that committee. Probably
12 some other people in the room were; I'm not
13 sure.

14 But EPA and NRC were directed to
15 write a standard based on and consistent with
16 that recommendation. So, we have two
17 standards now, and the old WIPP one is the one
18 that would apply to any new facility. It is
19 very much out-of-step with the way regulation
20 of repositories has gone in the rest of the
21 world.

22 Thank you.

1 CO-CHAIR HAGEL: Chris, thank you.

2 Why don't we follow right in
3 behind our speakers with questions and
4 comments from our panel? So, Subcommittee
5 members, the floor is open for questions to
6 our speaker.

7 John?

8 MEMBER ROWE: Thank you, Dr.
9 Whipple.

10 You make it all seem practical, or
11 at least for folks like me.

12 I would appreciate it if you could
13 just expand a bit on how you see the world
14 developing what I think you called dose
15 standards as opposed to containment standards,
16 and how you think we should go forward in that
17 respect.

18 MR. WHIPPLE: Well, you're quite
19 correct, the distinction is that, as far as I
20 know, every country in the world --

21 MEMBER MacFARLANE: No.

22 MR. WHIPPLE: No? Allison is

1 correcting me.

2 MEMBER MacFARLANE: But go ahead.

3 MR. WHIPPLE: Okay.

4 (Laughter.)

5 Just the countries I know about in
6 the world base their standards on limiting
7 doses to individuals.

8 MEMBER MacFARLANE: Sweden and the
9 UK have risk-limited standards.

10 MR. WHIPPLE: Okay. I'm sorry, I
11 used dose and risk somewhat interchangeably
12 because --

13 MEMBER MacFARLANE: And in Germany
14 as well.

15 MR. WHIPPLE: Yes, but they are
16 risk-based or dose-based as opposed to a
17 containment requirement which says that "X"
18 percent of all the waste in a repository is
19 allowed to leak out of a defined boundary in
20 a specified time period. The doses are not
21 specified or the risks are not specified. And
22 that's a very good approach.

1 So far as I know, most all of EPA
2 regulation of hazardous materials is dose- or
3 risk-based and not how slow can it leak. So,
4 the old standard is somewhat of an outlier.

5 MEMBER MacFARLANE: Can I follow
6 up that question?

7 CO-CHAIR HAGEL: Yes.

8 MEMBER MacFARLANE: So, I have
9 trouble with either these dose or risk
10 standards because I don't really understand
11 what it means when you apply a specific
12 numerical standard 10,000 or a million years
13 out in the future. What does it mean?

14 MR. WHIPPLE: Well, what it
15 depends on is the credibility of the
16 calculation, which is, of course, difficult to
17 confirm, and over such time periods it becomes
18 a reasonable, but unprovable best guess at
19 what might happen. I don't think you can do
20 better than that.

21 MEMBER MacFARLANE: Well, maybe we
22 need to rethink how we think about the

1 standard for something like this.

2 CO-CHAIR HAGEL: Susan?

3 MEMBER EISENHOWER: John actually
4 had my question. But in looking at your
5 lessons learned, maybe you could say something
6 about acquiring the land when a site is
7 selected. I'm not actually familiar with the
8 Ward Valley experience.

9 MR. WHIPPLE: Well, the other one
10 that was a success was the land for WIPP also
11 went through what was called the Land
12 Withdrawal Act. That, in fact, kind of was
13 everybody's signing on the final agreement
14 that had been reached. Once the State and the
15 DOE were happy, Congress was pleased to
16 implement an agreement that memorialized that.

17 CO-CHAIR HAGEL: Do you have a
18 followup, Susan?

19 MEMBER EISENHOWER: No.

20 CO-CHAIR HAGEL: Jonathan?

21 CO-CHAIR LASH: Dr. Whipple, it
22 seems as if one crucial set of issues for us

1 will be the question of the institutional
2 arrangements. Which institutions are
3 responsible for what part of the process of
4 identifying, characterizing, selecting a site?

5 I have sort of a two-pronged
6 question. Among the existing institutions,
7 having experienced the somewhat confused
8 process in which EPA is setting standards, but
9 the National Academy was asked to intervene,
10 what would you recommend for the future? And
11 also, in terms of what institution should be
12 responsible for the process, assuming we were
13 to consider other institutions, creating
14 something other than DOE, what would you
15 recommend?

16 MR. WHIPPLE: Wow, that's a lot
17 into that question. Back to the regulatory
18 side, EPA is the only regulator with respect
19 to radiological materials and WIPP. State has
20 a role with mixed waste.

21 I have been a reviewer on that,
22 both from the Academy side and from the EPA

1 side. I think they have done that job very
2 well.

3 I might note it broke NRC's heart
4 when EPA was selected for that job, but having
5 read both standards, I think the decision to
6 go with EPA was absolutely correct.

7 The process for Yucca Mountain has
8 been somewhat more complicated. But I think
9 the separation of the basic goals for public
10 health protection and hand them out to EPA, as
11 was done in the Yucca Mountain standard, and
12 then the implementation of detailed analysis
13 of site performance by NRC, actually works
14 pretty well.

15 There was some friction along the
16 way. The two organizations have major
17 cultural differences. But I think having two
18 agencies on the job is not a bad thing in that
19 case.

20 Now, to the broader question of
21 institutional arrangements for operating a
22 facility, I am not sure, if you took it out of

1 DOE, where it should go. I've heard mention
2 of public corporations and independent
3 organizations. Whether that would succeed, I
4 don't know.

5 You're still going to rely on
6 national labs and other contractors to do the
7 real work. I have no reason to believe that
8 you get huge quality swings between having DOE
9 manage that work versus a new entity which,
10 with past experience as a guide, involves
11 large numbers of the same old people who were
12 doing it before.

13 CO-CHAIR HAGEL: Per?

14 MEMBER PETERSON: Chris, I think
15 you will note that there's a lot of interest
16 and especially in standards. So, there's
17 actually two different types of standards that
18 are relevant. You mentioned both of them.

19 One would be a repository safety
20 standard. The NRC, in regulating reactors,
21 has moved away from risk-based, or they never
22 went to risk-based regulation, and they do

1 what's called risk-informed.

2 MR. WHIPPLE: Right.

3 MEMBER PETERSON: Which is they
4 apply a combination of deterministic
5 prescriptive criteria, such as defense-in-
6 depth type of criteria, along with also
7 requiring performance against a risk-based
8 criteria. So, could you comment on that?

9 And then, the second element is
10 the other part of standards is waste
11 classification standards. You had mentioned
12 that. I would just like for you to amplify a
13 little bit.

14 MR. WHIPPLE: Okay. As to the
15 first part, as Allison pointed out, the
16 uncertainties as to try to project far into
17 the future become substantial. No one with
18 good sense would literally believe
19 calculations of what doses might be. But you
20 can review it and look and see if they've got
21 water flowing downhill and gravity with the
22 right number, and a basic physical sense in

1 the modeling, but then it's pretty much a
2 judgment call.

3 As Per points out, there's also
4 established good practices in all things
5 nuclear, defense-in-depth and the use of
6 multiple barriers. In the case of an
7 underground repository, a lot of insight and
8 technology from the mining industry was
9 employed, how you built in safety. So, it is,
10 indeed, a judgment call in the end, informed
11 by calculations.

12 The waste classification question,
13 the U.S. has a classification system that is
14 based on when different categories of waste
15 were brought under regulation, rather than
16 their inherent hazard and radioactivity. I
17 find that nobody thinks it's very good, but
18 everybody would be afraid of what might happen
19 if you tried to change it.

20 Our company went through a minor
21 exercise of getting a RCRA landfill permitted
22 for low-activity mixed radioactive waste. It

1 was an interesting ride.

2 The main reason this was approved
3 was because the State had a waste in mind that
4 was orphan waste and had nowhere to send it.
5 And they said, you know, a RCRA landfill looks
6 just like a low-level waste landfill; why
7 don't we sort of team them up and we'll get
8 this stuff off the site? But that was a rare
9 event. I think if there had been a deep
10 pocket to pay for it, the State wouldn't have
11 intervened.

12 CO-CHAIR HAGEL: Any other
13 questions? Oh, I'm sorry, Mark.

14 MEMBER AYERS: Dr. Whipple, and I
15 know this could be a long answer, and I'm not
16 looking for that. But what is the extent of
17 research that has been dedicated to sub-sea
18 level?

19 MR. WHIPPLE: I think that
20 program --

21 MEMBER AYERS: Or sub-seabed
22 disposal.

1 MR. WHIPPLE: Sub-seabed disposal?

2 I think when the Waste Act Amendments of '82

3 -- Tom Cotton knows. Which year, Tom?

4 MR. COTTON: The amendments
5 mandated a continued program on it, but it was
6 never funded. So, it kind of died.

7 MR. WHIPPLE: The bloom came off
8 that rose when Jacque Cousteau said he didn't
9 like sub-seabed radioactive waste disposal.

10 (Laughter.)

11 Although it was a technically-
12 interesting program.

13 CO-CHAIR HAGEL: Vicky?

14 MEMBER BAILEY: Dr. Whipple, this
15 may be a tad complicit, but if you are sitting
16 on a state commission -- and I am trying to
17 look at your slides here and your
18 recommendation -- your answer to the first
19 question, "Is a facility needed?", you say one
20 will be needed eventually. Eventually means?

21 Do I continue to research and
22 develop as far as looking at repositories? Do

1 I keep it onsite? Do I leave the waste at the
2 orphan sites forever in dry cask storage? Do
3 I look at an interim central storage? So, in
4 the meantime until I get to "eventually", what
5 should I be doing?

6 MR. WHIPPLE: Well, as I
7 mentioned, I think getting the waste off the
8 orphan sites makes sense. To the extent that
9 one worries about the security of spent fuel,
10 I think fewer sites is easier and makes it
11 clearer than more sites.

12 But I also think that dry cask
13 storage is a very safe technology. The waste
14 is heavy. It's highly radioactive. It would
15 be hard to steal.

16 Say in comparison to coal ash, the
17 volumes are relatively small. I don't think
18 that it's we have mountains of this stuff
19 building up. It's really not a great deal.

20 I think that while the frustration
21 with slowness of the whole system is clearly
22 felt, in terms of a real necessity to dispose

1 of the waste soon, I don't see that.

2 MEMBER BAILEY: So, you are saying
3 it could be safely stored onsite indefinitely?

4 MR. WHIPPLE: Well, I don't know
5 how long indefinitely is, but a hundred years
6 or so.

7 MEMBER BAILEY: Well, I don't know
8 how long "eventually" is. I'm just trying to
9 figure this all out.

10 (Laughter.)

11 MR. WHIPPLE: Yes, 50 to 100
12 years, the spent fuel will be safe and stable
13 for that period of time.

14 MEMBER BAILEY: Okay. Thank you.

15 CO-CHAIR HAGEL: Allison?

16 MEMBER MacFARLANE: Chris, it is
17 nice to see you. It's been a while.

18 Can you say a little something
19 about whether you think there should be
20 criteria, technical criteria, other kinds of
21 criteria, for a repository site, and what
22 those criteria might look like?

1 MR. WHIPPLE: Yes. And most of
2 these are sanity-check-type criteria rather
3 than rigid criteria. Don't put it near
4 useful, important bodies of water, in them,
5 next to them, over them. That just doesn't
6 make sense.

7 Don't put them in highly-populated
8 areas, not that we were looking at those.
9 But, for example, back when we had five
10 candidate sites in the waste program, one was
11 at Hanford, which is right next to the
12 Columbia River.

13 The other was in decimate Texas on
14 top of the Ogallala Aquifer. And DOE did its
15 best to explain the lack of hydraulic
16 communication between a repository and an
17 aquifer. And the local farmers said, "Yes,
18 but if I can't sell my crops, I'm stuck. And
19 if people won't buy them because they're
20 afraid of the radioactivity, whether or not
21 there is any, I'm stuck." And that was a
22 point DOE was somewhat slow to pick up.

1 So, I do think that the water and
2 other resources and populations ought to be
3 key drivers.

4 I'll mention one other nice
5 feature of a Swedish site, which is this is a
6 subsurface site designed in a way that, if it
7 leaks, the radioactivity goes into the ocean
8 without going through people on its way, which
9 is a fairly attractive design.

10 CO-CHAIR HAGEL: Any other
11 questions?

12 (No response.)

13 Dr. Whipple, thank you.

14 MR. WHIPPLE: Thank you, Senator,
15 very much.

16 CO-CHAIR HAGEL: Our next
17 presenter is Jim Williams. Jim comes to us
18 from the Western Interstate Energy Board, an
19 arm of the Western Governors' Association.
20 Jim serves as Manager of the Board's High-
21 Level Radioactive Waste Program.

22 He will speak to us about policies

1 and processes for implementing a national
2 waste management strategy in our federal
3 system of government.

4 Jim, welcome. Thank you.

5 MR. WILLIAMS: Thank You, sir.

6 And the Western Governors greatly
7 appreciate this opportunity to appear at your
8 first meeting of this Disposal Subcommittee.
9 We hope to have further opportunity to work
10 with the Commission in areas where we have
11 experience and expertise. Transportation
12 might be one; inland storage might be another.

13 I'm here on behalf of the Western
14 Governors' Association, which represents the
15 Governors of 19 western states and three U.S.
16 flag islands.

17 Joining me is Shanna Brown, who is
18 the D.C. Director of the Western Governors'
19 Association.

20 Through the Association, the
21 Governors coordinate policy among western
22 states in several areas, including policies of

1 the back end of the nuclear fuel cycle. We
2 have developed bipartisan policies on several
3 topics of concern of this Commission. We have
4 a Memorandum of Agreement with the Secretary
5 of Energy for transportation of transuranic
6 waste for WIPP. And we have longstanding
7 cooperative agreements with the Department to
8 engage in regional transportation planning of
9 all DOE-owned radioactive waste.

10 Next slide, please.

11 On May 24th, the Western Governors
12 sent a letter to Secretary Chu. It makes
13 clear that this Commission's comprehensive
14 review is of serious interest in the West. It
15 notes that the western states may be the best
16 source of experience and insight regarding
17 policies and processes for implementing a
18 strategy in this policy area in our federal
19 system of government, and it asks for full
20 opportunity for state governments to
21 participate.

22 We are suggesting with this three

1 types of participation. One is individual
2 western states, presumed to be New Mexico and
3 Nevada, which we'll do today.

4 And the second is, with the
5 cooperation of DOE, participation on a
6 regional basis through a long-established
7 regional planning process that has been
8 endorsed both by the Western Governors and by
9 the Secretary of Energy. And we would hope
10 that would extend both to the activities of
11 this Commission and to the activities of other
12 agencies in the meantime who are dealing with
13 aspects that flow from the Administration's
14 decision to terminate Yucca Mountain.

15 We also recommend that the
16 Commission initiate an independent inquiry to
17 provide the basis for a political and an
18 institutional approach to rebuild public trust
19 in this policy area.

20 And now we go to the next one,
21 please.

22 In that regard, Matthew Bunn, at

1 your last full Commission meeting, stated that
2 this may be the most important contribution
3 that this Commission could make. We agree,
4 and we have a few further thoughts.

5 One is that in the U.S. an
6 effective political and institutional approach
7 must largely be built around our federal
8 system of government, and that public trust in
9 federal initiatives is realized or lost
10 through policies and processes of federal,
11 state, and local interaction.

12 Second, whether the topic is
13 disposal or storage or transportation, an
14 essential resource regarding what's gone wrong
15 and right and why, it ought to be the state
16 government officials who have lived with parts
17 of this policy, often for 15 or 20 years. So,
18 I'm suggesting that we need to systematically
19 assemble this experience, as well as insight
20 from other corridors, as a basis for then a
21 political and an institutional approach.

22 Third, the systematic review and

1 assessment in this area and to develop
2 recommendations should be independently
3 conducted. If the Commission itself lacks the
4 time and resources to do it itself, it might
5 cause it to be done by a qualified and
6 prestigious third party, the National Academy
7 of Public Administration possibly or the
8 Government Accountability Office possibly.

9 Fourth, if the review and
10 consideration extend beyond the Commission's
11 two-year timeframe, the Commission could set
12 scope, direction, expectation, and could
13 emphasize the crucial role of the political
14 and institutional approach in this policy
15 area.

16 And lastly, that meanwhile, as the
17 Commission considers topics such as the need
18 for an entity, what sort of management entity
19 should deal with the spent fuel and high-level
20 waste, it should carefully consider how such
21 an entity could effectively follow through on
22 a better long-term approach.

1 The next one, please.

2 While we focus on this, of course,
3 this institutional and intergovernmental
4 process is important in any policy area. We
5 think it's crucially important for the
6 policies regarding the back end of the nuclear
7 fuel cycle.

8 And our reasons are that the
9 public dreads highly-radioactive waste. It
10 mistrusts its federal program managers. And
11 also, in no other policy area that I can think
12 of do federal policies cut so differently
13 among states and localities. So that fairness
14 can be perceived differently by different
15 parties at different times, and the sense of
16 fairness is hard to establish and maintain.
17 I would say that a good case could be made
18 that failures and successes in this policy are
19 largely attributable to the implementation
20 policies and procedures.

21 So the next one is a quick review
22 of the Western States' experience. It

1 includes screening, characterization, and
2 selection for spent fuel disposal, not only at
3 Yucca, but also in Washington and Texas and
4 Utah.

5 It includes interim spent fuel
6 storage facilities, privately- and federally-
7 sponsored, in New Mexico, Oregon, Utah, and
8 Wyoming. It includes interim storage for
9 high-level waste and DOE spent fuel and Navy
10 spent fuel in Washington and Idaho. And it
11 includes transuranic waste generation,
12 storage, transportation, and disposal, and the
13 latter in WIPP in New Mexico.

14 The West also has 13 operating
15 reactors, seven shutdown reactors, 18 research
16 reactors, 10 dry storage licensees, and low-
17 level radioactive waste disposal facilities in
18 Texas, Nevada, Utah, and Washington.

19 So, the point of this list is to
20 prompt to consider the resource of ground-
21 level experience of the state government
22 officials who have been engaged with federal

1 and local governments on various components of
2 this in various circumstances with success and
3 failure often over 25 years.

4 Now my next one, please.

5 How does all this experience,
6 properly assembled, apply to the topics under
7 the purview of this Commission? The first is
8 to recognize the daunting array of questions
9 that come up in your charter. We have gone
10 and added to it in the area of disposal, and
11 those are included in a footnote in the little
12 paper.

13 Am I finished?

14 CO-CHAIR HAGEL: Finish your last
15 slide, and then we'll go to questions.

16 MR. WILLIAMS: Okay.

17 CO-CHAIR HAGEL: Thank you.

18 MR. WILLIAMS: And so, when we
19 have other questions like that on interim
20 storage, transportation, in general, federal,
21 state, local interactions, of course, it is
22 not tabula rasa in the West in the context of

1 the NWPA. The West has a whole bunch of
2 existing policies that have been developed and
3 maintained over 20 years. But your charge is
4 to lead us into a new regime beyond NWPA, and
5 maybe that can be done in such a way that we
6 can all think and act anew.

7 CO-CHAIR HAGEL: Jim, thank you
8 very much.

9 Questions? Susan?

10 MEMBER EISENHOWER: In one of your
11 slides -- I think it was the previous one --
12 it said something about taking into
13 consideration what went right. Oh, yes,
14 ground-level experience, what went right,
15 wrong, and why. Could you give us a little
16 overview of what went right and what went
17 wrong and why?

18 MR. WILLIAMS: In my view?

19 MEMBER EISENHOWER: Yes.

20 MR. WILLIAMS: Well, in part, what
21 I am referring you to is to the experience of
22 people in state governments who have lived

1 with these issues or parts of these issues in
2 many different circumstances over a long
3 period of time. A lot of these people are
4 getting up in age, like myself. I think it's
5 time to systematically glean from them their
6 experience as well as others.

7 But I am pointing to this whole
8 area of implementation policies in our federal
9 system of government. And Chris mentioned
10 that. That's a factor that limits to some
11 degree the application of experiences like
12 those in Finland and Sweden.

13 I'm not saying that this is easy,
14 but I'm saying that we need a good,
15 systematically-developed resource from which
16 to consider building other kinds of policies
17 that go forward in each of these areas. I
18 think that, to some degree, those policies can
19 be developed for disposal, for interim
20 storage, for transportation, for general
21 federal and state and local interactions
22 without binding you as to what components of

1 the strategy you put first.

2 I haven't got this down into a
3 scope of work that I would suggest, but that's
4 the way I'm thinking.

5 CO-CHAIR HAGEL: Per?

6 MEMBER PETERSON: Actually, it is
7 a real personal pleasure to hear from the
8 Western Governors' Association for me, since
9 I was born in New Mexico, grew up in Nevada,
10 and now work in California.

11 (Laughter.)

12 But I'm truly, I guess, a
13 Westerner, even though my name wouldn't
14 suggest that.

15 You mentioned I think a really
16 critical point, which is that we face this
17 daunting array of questions which clearly
18 would fall outside the capacity of any
19 Commission like ours to answer every single
20 one.

21 Furthermore, the question is
22 whether that is the best approach or whether

1 the more important idea is to think about
2 processes by which those questions could be
3 answered in moving forward.

4 Let me be a little bit more
5 specific. I think one of the critical
6 questions that we face is how to assure that
7 we have effective and rigorous state oversight
8 of those issues which impact states, and not
9 just the disposal element, but, of course, the
10 disposal element typically involves a local
11 community.

12 Around that community you have
13 additional communities that are subject to the
14 convergence of all the transportation. And
15 transportation, of course, is not the
16 responsibility of our Subcommittee, but it is
17 clearly something that the Western Governors'
18 Association has taken very seriously. I know
19 our California Energy Commission has looked at
20 it extensively.

21 And what I'm curious about is,
22 because there's many details involved and

1 there's been successful experience, but it
2 involves defense transuranic wastes, Naval
3 spent fuel, research reactor fuel. So, the
4 things would be changing.

5 Would it make sense to look for a
6 process where, in fact, you spend time to
7 figure out the details of how to construct an
8 oversight process that will work for the
9 states, and say that you need to be successful
10 in that as a stage of moving forward, and if
11 you're not, you don't move forward towards
12 developing, say, a disposal site or an interim
13 storage site? But that it's really critical
14 that you have a process that will allow you to
15 develop the detailed approach to providing
16 this oversight and emergency response and
17 other things which are legitimate and
18 necessary state responsibilities.

19 MR. WILLIAMS: And your question
20 is the degree to which this Commission should
21 feel obligated to go into those kinds of
22 details?

1 (Laughter.)

2 MEMBER PETERSON: Well, again, I
3 think that --

4 MR. WILLIAMS: I mean my answer
5 is, if you can arrange it, yes. You know,
6 that's why I did some of my proposals that
7 refer to your limits of time and resources and
8 what have you. And yet, here I think we're
9 talking about something that's actually
10 critical.

11 So, have we assembled the
12 experience that is out there in the best and
13 most useful way for this Committee or any
14 decisionmaker? I think, really, we have a lot
15 of pieces out there. Bruce will present parts
16 of one, but it's only one. There are a whole
17 bunch.

18 So, I think it needs to be
19 carefully gone through. I think it needs to
20 be independently gone through. I think there
21 are people out in the world who have thought
22 about these things from academic and other

1 points of view that would be useful in sifting
2 from that experience useful bits.

3 But I think it really would be
4 useful to get down to some fair degree of
5 specifics on this and not leave it at broad,
6 you know, recommendations for communication
7 all along the way, and all that stuff.

8 For example, my first one is one
9 that I've been interested in for a long time.
10 It is, how should site suitability screening
11 be conducted? Okay, that refers back to an
12 issue that was floating around before 1987 in
13 which the West had a site screening process
14 that was considered locally messed up. The
15 East had one that sort of built on the western
16 experience, but was considered better, but it
17 was cut short by the decisions in 1987.

18 Well, did that East site screening
19 process have something? Is that useful going
20 forward in some places? Or how would we
21 change it now? On what basis would we change
22 it?

1 So, I think it needs to get down
2 to these kinds of specifics on not just that
3 topic, but a whole series.

4 MEMBER PETERSON: And actually, I
5 do agree with you completely. I'm thinking
6 about much, much finer levels of detail, at
7 which point you would have to develop those
8 for the specific case. Particularly these
9 criteria for site screening, those are
10 definitely items which we need to consider.

11 CO-CHAIR HAGEL: Jon?

12 CO-CHAIR LASH: I want to follow
13 up on this same line started by Susan and
14 continued by Per.

15 Your basic proposition was we need
16 an independent inquiry into what went right
17 and what went wrong for the sake of learning,
18 for the sake of credibility, and to rebuild
19 trust. I think you would probably find broad
20 sympathy among the Subcommittee about that.
21 I certainly think that's important.

22 But then you recognize the problem

1 that we face. There's a huge amount of
2 knowledge and a great many people on a great
3 many issues. Clearly, in the timeframe that
4 this Subcommittee has we can't harvest it all.

5 At the same time, we can't go
6 forward and make a set of recommendations
7 without at least making some attempt to learn
8 from the past. So, I think Per's question
9 was, how do we draw a line? There's huge
10 expertise in this room. There's hundreds of
11 years of experience with this issue.

12 Should we ask the Western
13 Governors to over the next three months
14 prepare a paper at least reflecting your key
15 experiences and go to each of the
16 constituencies and say we're going to do the
17 best we can over three months to learn from
18 this?

19 Because we if we refer it to NAPA,
20 we'll hear back in three years. It's a
21 wonderful process. I love the NAPA process.
22 I've been on their panels. But it is not

1 hasty.

2 MR. WILLIAMS: Well, my own
3 personal thinking is that somehow it needs to
4 be independently done. If you express
5 interest in the Western Governors' Association
6 assembling this, we would do our dang-gum best
7 to do it. And you have people that are coming
8 forward from individual states today and
9 elsewhere who will have parts of that or at
10 least suggest parts of that.

11 The conundrum is, frankly, that
12 the very people who have this ground-level
13 experience in various parts and various
14 processes are people that have worked for
15 state governments and were responsible to
16 their Governors for certain positions. So, I
17 think of them as people who have an invaluable
18 resource of experience that must be, or I
19 would argue really should be, assembled, but
20 are not in the best position to evaluate that
21 resource, once assembled, and draw from it
22 conclusions going forward.

1 That's how I come to an
2 independent and prestigious process. I'm
3 sorry I don't have a way out of your dilemma,
4 but if you don't have the time, the resources,
5 those two key things, you might be able to set
6 it in process to define the parameters, to
7 define the scope, to define the expectations,
8 to emphasize that whatever strategy, that
9 these things need to be really addressed, and
10 maybe that can provide a better basis for
11 going forward. I know it's inadequate, but
12 that's the best I've got.

13 CO-CHAIR HAGEL: John?

14 MEMBER ROWE: I appreciate your
15 comments on ways to build a more effective,
16 trust-engendering process. I think all of us
17 agree that that's essential in the states and
18 in the communities.

19 But as one looks at this welter of
20 information and studies, do you have any
21 confidence that there actually is a way to
22 work through these processes that ever gets

1 anything done?

2 MR. WILLIAMS: Well, can I
3 guarantee that if -- I would be foolish to say
4 that you could come up with a nice scheme for
5 interaction that would guarantee everybody
6 being happy at every step of the way. And it
7 is certainly clear that high-level politics
8 can often intervene in any such scheme.

9 But I would make the proposition
10 that there should be, as we go forward we
11 should make a full commitment to this, and the
12 agencies that are the implementing agencies
13 should have a full commitment to this.

14 Actually, it is more faith than
15 anything else, but I think that just such a
16 scheme -- I mean we don't have a contrary
17 example, except for -- well, we do have a
18 contrary example. You know, it's the WIPP
19 transportation process was a process in which
20 there was kind of a fortuitous gap in the
21 program when nothing was happening, but WIPP
22 was waiting to be started.

1 There were a couple of guys, DOE
2 guys, who spent years negotiating with western
3 states on the parameters for a transportation
4 process for WIPP. Those resulted in something
5 called the WIPP PIG, a Program Implementation
6 Guide. When the WIPP began in -- what was it?
7 -- '91 or something, that guide was put into
8 effect and has gone forward with some very
9 little change ever since.

10 It has saved DOE and the federal
11 government masses of money and time and hassle
12 by doing that. It is extra-regulatory. It
13 required western states initially to agree
14 that these shipments from Hanford would go
15 this way down through Denver, and so forth and
16 so on. It has worked.

17 So, to take that one example, yes,
18 it worked. Some of these others are harder.
19 I know that. But we have also lots of new
20 experience to draw on, and it might be good to
21 set up the process fairly carefully at the
22 outset, get people to review it fairly

1 carefully, buy-in at a certain level, and then
2 build trust in the process as we go forward.

3 CO-CHAIR HAGEL: Allison?

4 MEMBER MacFARLANE: I think we've
5 got an excellent set of questions here, some
6 of which we have gone through a little bit.
7 I wonder if you could say anything, if you
8 have an answer to the question, should the
9 host state approve permanent repository?

10 MR. WILLIAMS: Me?

11 MEMBER MacFARLANE: Yes, you.

12 (Laughter.)

13 MR. WILLIAMS: The Western
14 Governors have not taken a position on this.
15 The way it worked was that we had the '82 Act.
16 That set and trained the repository process.
17 And the Western Governors' Association has
18 come out less on disposal actually than it has
19 on interim storage and transportation.

20 But my answer, my personal answer,
21 is, yes, that if the process doesn't lead the
22 state to approve the process, it really is

1 hard to do. I mean states are in the
2 Constitution. They have health and welfare,
3 very specific in health welfare
4 responsibilities.

5 And I actually think it is the
6 state, you know the states, but I think it is
7 a process that can solve your repository with
8 state approval.

9 CO-CHAIR HAGEL: Any additional
10 questions?

11 (No response.)

12 Jim, thank you.

13 MR. WILLIAMS: Yes, sir.

14 CO-CHAIR HAGEL: We appreciate it
15 very much.

16 As Jim is leaving the podium, our
17 next speaker this morning is Bruce Breslow.
18 Bruce is Director of the Nevada Agency for
19 Nuclear Projects. Bruce will give his
20 agency's perspective on lessons learned from
21 the Yucca Mountain project.

22 Bruce, welcome. Thank you for

1 coming.

2 MR. BRESLOW: Mr. Chairman,
3 members of the Commission, thank you for
4 having the State of Nevada here.

5 Again, my name is Bruce Breslow.
6 I'm the Executive Director for the Agency for
7 Nuclear Projects. We were set up by the
8 Nevada Legislature and appointed personally by
9 the Governor, reporting to a Commission made
10 up of appointees from local government,
11 county, cities, et cetera, et cetera, to
12 fulfill the State of Nevada's obligations
13 evident in the nuclear waste policy.

14 I have two points. What went
15 wrong and how we think it could be made better
16 in the future.

17 We think that the U.S. Department
18 of Energy was probably the wrong entity to
19 implement the Federal High-Level Waste
20 Program. Placing the program within the
21 Department of Energy probably doomed it from
22 the start. The very character of the

1 Department of Energy with its culture of
2 secrecy made it perhaps the wrong entity to
3 implement a program that required the
4 compromises in the public credibility that was
5 embodied in the Nuclear Waste Policy Act.

6 Now in Nevada the Department of
7 Energy created a hostile atmosphere almost
8 from the very beginning. In 1984, the State
9 was forced to go to court to secure our own
10 independent oversight role, a role that was
11 laid out and specified in the Nuclear Waste
12 Policy Act.

13 Because of the heavy-handed manner
14 in which DOE has implemented the economic
15 program and a long history of problems and
16 mistrust, it would be difficult for a siting
17 program headed by DOE to succeed in the
18 future.

19 But I'm new here. I've only been
20 with the State for two years. So, I come with
21 an open mind, and the people that I've worked
22 with in the last couple of years from the

1 Department of Energy have been a lot more
2 forthcoming and outgoing than a lot of the
3 people in my agency who have been with the
4 agency for 25 years have had to suffer through
5 in the past.

6 The Nuclear Waste Policy Act as
7 amended in 1987 created by itself an
8 adversarial role between the DOE and the State
9 of Nevada. Because even if Yucca Mountain had
10 turned out to be a suitable site, which the
11 State proved that it is not, Nevada would have
12 been required to forfeit our legal and our
13 scientific oversight rights if we were to
14 enter into any agreements with the DOE because
15 of the structure of the amended Nuclear Waste
16 Policy Act.

17 Early on, many years ago, it was
18 known that the Yucca site had serious
19 geotechnical problems. But DOE not only
20 ignored the problems, but in working with the
21 State they trivialized them and proceeded to
22 do whatever it took to make Yucca work.

1 The focus of DOE's work on the
2 project changed dramatically after the 1987
3 amendments. They singled out in the
4 amendments Yucca as the sole site for
5 characterization, and DOE went from asking is
6 Yucca the suitable site to, what can we do to
7 make Yucca work?

8 The science at Yucca deteriorated
9 over the years as time went on and studies
10 came in. DOE's site characterization program
11 appeared to ignore the findings that might
12 disqualify the State.

13 DOE, in fact, petitioned Congress
14 to exempt the site from the health and safety
15 regulations that they had set themselves in
16 order to get around all of the site
17 suitability problems, and then they scrapped
18 their own site evaluation guidelines when the
19 site couldn't meet them.

20 Yucca failed for a lot of reasons.
21 We are going to switch slides here. But the
22 element, a critical element was,

1 unquestionably, the forced nature of the
2 siting process. If DOE had been required to
3 obtain the State's informed consent -- that's
4 a question that you asked earlier -- to
5 continue with this project, Yucca would have
6 been disqualified years ago, saving billions
7 of dollars to the public, and DOE would have
8 had to move on to a truly suitable location,
9 and it would probably be operating a
10 repository today.

11 Congress shares a large portion of
12 the blame for the failure of the program to
13 produce the repository because, if politics
14 had not intervened in 1986 and Congress had
15 not required DOE to implement, or if Congress
16 had required them to implement the original
17 Act as intended, and not gutted it for
18 political considerations back in 1987, it is
19 very possible the country would have a
20 repository today.

21 I'm presenting the short version.
22 I provided you all with the long version,

1 which has the footnotes to support the
2 individual paragraphs.

3 But I'm going to switch now to
4 part two which is, how could this work in the
5 future? How can a federal government
6 successfully site and build a deep geologic
7 repository? The first question you asked is,
8 is one needed? The answer is yes.

9 But my observations are based on
10 the Nevada experience with the Yucca Mountain
11 Project, and nothing in my remarks should be
12 construed as suggesting in any way that the
13 Yucca Mountain site can somehow be fixed or
14 made acceptable to the State of Nevada.

15 In 30 years no state has come
16 forward and said we'll do it. No one has put
17 their hand up. There's a big risk that
18 immediately makes the public skeptical right
19 at the onset, and it energizes all of the
20 anti-nuclear groups around the country to come
21 to the state's support, if they're not
22 supporting a repository.

1 In fact, states are currently
2 suing to keep the Department of Energy from
3 withdrawing the license because they don't
4 want it to possibly to come to their state as
5 a fallback option.

6 There may be a need, in fact,
7 there is a need, for a cooling-off period,
8 five, 10 years before the program is restarted
9 to recalibrate this effort, because the final
10 decision must be voluntary. It has to be
11 voluntary. It must begin with a fresh, clean
12 slate. It must look for the sites that
13 science finds, the best sites science can
14 find.

15 Without the opportunity to say no,
16 no state is going to put itself and engage in
17 any sort of conversation about high-level
18 nuclear waste repository in the future. The
19 sites have to be fairly characterized first
20 before being selected as opposed to being
21 selected by convenience, like Yucca was or
22 Hanford might have been. They need to be

1 characterized by science first prior to being
2 selected.

3 I urge you not to let any states
4 off the hook. Don't pardon any states out of
5 this political process during the search.

6 There has to be credibility
7 developed at the local, the regional, the
8 tribal, and the state level, a full
9 partnership, not committees that people can
10 serve on, but a full partnership must be
11 created with the state and the tribes and the
12 counties and the regional governments and the
13 local governments.

14 This means being a full partner
15 with DOE or whatever entity is selected to
16 bring the program forward to develop a
17 credible repository program. If safety
18 concerns cannot be alleviated, then the state
19 must have the final decision to opt out.

20 Without this, again, no state
21 would be willing to go down the road as they
22 watched the Nevada experience. But once there

1 is a commitment to a scientifically-based and
2 truly voluntary siting process, the entity
3 responsible for the program might then be able
4 to build credibility.

5 How do you do this? By offering
6 meaningful incentives, that is, for a hosting
7 facility. This could include constructing
8 nuclear energy research facilities near the
9 site, preferably a national laboratory for
10 that state.

11 Because as prestigious scientists
12 and experts integrate, involve themselves, and
13 be part of the local fabric of the community,
14 they bring the credibility and build
15 credibility on a local level. But, again,
16 this can only work if the site is
17 scientifically-suitable and the participation
18 of the host state is voluntary.

19 It's risk/reward. A state must
20 have compensation, be financially compensated
21 for hosting a repository, and the amount of
22 compensation must be substantial enough for a

1 state to consider it a true incentive. A
2 state cannot be required to give up its rights
3 to ensure safety in exchange for compensation,
4 as the Nuclear Waste Policy Act as amended
5 laid out for Nevada.

6 And the state must be able to
7 provide oversight in exchange for any
8 incentives. Incentives must be substantial,
9 likely in the billions of dollars, not \$10
10 million offered to the State of Nevada and
11 never accepted. And that's for the service
12 and for the risk involved.

13 If you look in my long
14 presentation, you will see -- I see some
15 people laughing in the audience -- it's less
16 than a half of a cent for a kilowatt hour,
17 which would provide an ample compensation
18 package.

19 Funds and other substantial
20 inducements must be set contractually. They
21 can't be at the mercy of politics. They can't
22 be at the mercy of if a Congress changes two

1 years down the road.

2 And finally, my last slide, a
3 repository cannot be a federal project. By
4 necessity, it must be a community project. It
5 must be run by a federal or private entity,
6 but joined equally by the state, the tribes,
7 the regional government, the counties, and the
8 local governments. A successful repository
9 project can be achieved, but it will be in an
10 open process, fully involving the state, the
11 region, and the local communities. It's
12 risk/reward, and everybody has to develop and
13 share in that.

14 Did I time that out okay?

15 (Laughter.)

16 CO-CHAIR HAGEL: Brilliant. Thank
17 you, Bruce.

18 Questions? Per?

19 MEMBER PETERSON: Bruce, you've
20 provided an excellent list of recommendations.
21 I want to concur with this set of insights
22 that you have here.

1 I have an additional question.

2 One of the dimensions that we will be looking
3 at is the potential for advanced fuel cycle
4 technologies to have some impact on quantities
5 of used fuel and changes the nature and
6 characteristic of materials that might be
7 disposed of.

8 We don't know how that will turn
9 out, but certainly it means that you would be
10 looking more towards holding some materials in
11 interim storage. We know that there is a
12 strong desire to see materials move from
13 decommissioned reactor sites.

14 So, in fact, a system that would
15 be designed to be more flexible and could
16 develop these technologies would be some
17 combination of centralized storage possibly
18 and some disposal capacity, something that
19 would take more than just one state to host.

20 In fact, this gets to the heart of
21 the question. To what extent do you think
22 problems emerged with the previous process

1 simply because in the end it dumped everything
2 into a single location, and in that sense, put
3 the entire burden onto a single state to
4 handle the problems of nuclear waste?

5 MR. BRESLOW: Well, the NIMBY, the
6 "not in my backyard" or I would prefer CAVE,
7 "citizens against virtually everything," you
8 immediately put it right in their bailiwick
9 when you say this is where it's going. And
10 you do it for political reasons.

11 So, I mean Nevada had no clout
12 whatsoever back then. You can see in my
13 footnotes who had political clout and why
14 their states were cut out at the end.

15 But it came right after years,
16 almost a thousand nuclear explosions where the
17 people in Nevada were told, "That's okay. Go
18 wash your car off and everything will be
19 fine." They weren't as trustful of the
20 Department of Energy as they might have been
21 before the experiences over the years of the
22 Nevada Test Site.

1 Nevada accepts more than a
2 thousand shipments of low-level waste at the
3 test site every year. So, we are doing
4 things. We have a huge munitions depot in
5 Hawthorne, Nevada. We have Top Gun in
6 northern Nevada. We have Nellis in southern
7 Nevada. We are working as well as we can with
8 the federal government.

9 But in this case, what they said,
10 "Oh, by the way, we're going to move all this
11 stuff over here and dump it there," it made it
12 a little tougher for the State to swallow.

13 And when the State started doing
14 its own scientific oversight, it quickly came
15 to understand that Yucca as the site was
16 chosen by convenience because it was already
17 a test site. There were contractors there.

18 But the site itself was fractured
19 rock, and the water moved quickly through the
20 pathways, and it is a corrosive environment.
21 It leaks into the aquifer. We have 233
22 contentions that we don't know if we are going

1 to be litigating or not because it's dead;
2 it's alive; it's dead; it's alive. You know,
3 we're kind of ignoring all of that and just
4 working forward on the science of the site if
5 it should come to the State of Nevada.

6 So, yes, it would be nice to be
7 shared, but it really is, if you're looking at
8 the transportation program. DOE, when we
9 talked about entities responsible, spent
10 almost a billion dollars in 25 years on a
11 national transportation plan, which came out
12 to be 25 pages; it was almost a leaflet.

13 And the only thing of consequence
14 that it says, that the federal government will
15 not spend one dime on infrastructure
16 improvements. So, we didn't get much out of
17 that.

18 CO-CHAIR HAGEL: Susan?

19 MEMBER EISENHOWER: Well, Bruce,
20 thank you for that terrific presentation.

21 You did say one thing that I would
22 like to just press you on --

1 MR. BRESLOW: Sure.

2 MEMBER EISENHOWER: -- not
3 necessarily from a Nevada point of view, but
4 if we're trying to think about a national
5 policy to this. You said that science had to
6 come first, that this prescription to the
7 scientific scenario was an essential first
8 step. At the same time, you said that any
9 site should be located voluntarily.

10 Now what would you advise a
11 Commission like this if we find a situation in
12 the future where the science underscores the
13 utility of the site, but the local community
14 doesn't? I mean, what would you advise a
15 national Commission like this with respect to
16 some tension that might exist in that area?

17 MR. BRESLOW: Well, it's so hard,
18 but in other ways it's so easy. You let
19 science dictate the list of sites, whether
20 it's your top ten -- you're never going to
21 find one perfect, but you'll come up with the
22 sites; science will.

1 Then, you have to add a
2 substantial incentives program that would make
3 a state even talk to you. But even if they
4 talk to you, you have to give them the right
5 eventually to say no, in case when you're
6 doing the further characterization and
7 oversight it doesn't work out. Then, you have
8 other sites that you can go to.

9 But, again, I would hate to say
10 that the incentives have to be so substantial,
11 but they really do. For somebody to buy into
12 such risk, the incentives have to be that
13 substantial, and you have to be able to go
14 forward with always being able to say no, or
15 you can't do your own independent oversight.

16 MEMBER EISENHOWER: I have a
17 follow-up question on that. I mean, if the
18 science is right, are the risks really that
19 substantial? Or are you talking about
20 political risks in this?

21 MR. BRESLOW: No, I'm talking
22 about health risk. I have read in editorial

1 after editorial across the country for every
2 state that wants to ship their waste to Nevada
3 that Yucca Mountain is the most steady piece
4 of land in the world. Well, it may be, but
5 the studies show that it's not the site it was
6 cracked up to be, and that in order for it to
7 work, you need 11,500 titanium drip shields to
8 be put over it to prevent rock fall and the
9 corrosive water from dripping on them.

10 But, again, common sense, DOE's
11 plan wasn't to put in the drip shields at the
12 beginning. It was to wait 100 to 200 years
13 after the waste is already in all of the
14 placement drifts and then put it in.

15 Now the repository is going to be
16 over 500 degrees. It's going to be
17 radiologically hot. Humans can't go in there.
18 So, robots will have to do it.

19 In no margin-for-error drifts,
20 100, 200 years in the future, and the titanium
21 could use up about 23 percent of the earth's
22 supply in the years they're doing it. So,

1 what makes sense out of that?

2 MEMBER EISENHOWER: Yes, I would
3 just like to follow up once more and maybe
4 also emphasize for everybody in this room
5 we're not a siting Commission.

6 MR. BRESLOW: Sure.

7 MEMBER EISENHOWER: So, we're
8 trying to be working our way through what we
9 should recommend from the national policy
10 point of view.

11 So, back to this, if the science
12 is right, are the risks that great? Are they
13 political risks? I mean I'm talking about in
14 a generalized way, but around Yucca Mountain
15 per se.

16 MR. BRESLOW: For people running
17 for election there are political risks.

18 MEMBER EISENHOWER: Okay, so they
19 are political risks?

20 MR. BRESLOW: For people running
21 for election.

22 MEMBER EISENHOWER: You see that

1 as a political risk rather than a health risk?

2 MR. BRESLOW: Always.

3 MEMBER EISENHOWER: So, when you
4 were talking about the health risk, you were
5 emphasizing --

6 MR. BRESLOW: I think the health
7 risks are what inevitably are the most
8 important risks. But you have to recognize
9 politics because politics created the Nuclear
10 Waste Policy Act. Politics amended the
11 Nuclear Waste Policy Act. Politics is what is
12 keeping Yucca Mountain from going forward.
13 The courts may overturn it. But it is
14 politics, as well as the science.

15 So, in order to get politics to
16 even have a chance to butt in, there's your
17 incentive package.

18 CO-CHAIR HAGEL: Allison?

19 MR. BRESLOW: I'm speaking direct.
20 I don't mince words. I may get beat up by my
21 agency when I get home.

22 MEMBER EISENHOWER: Thank you very

1 much. Nothing more.

2 MEMBER MacFARLANE: Thanks. We
3 appreciate frankness. We shouldn't mince
4 words.

5 So, in that vein, based on what
6 you have learned in Nevada, et cetera, are
7 there criteria that you would apply to a
8 repository siting, you know, just some general
9 criteria for a suitable suite?

10 MR. BRESLOW: I am not going to
11 give those to you. I'm one of the only non-
12 PhD's in the room. I'm not a scientist. I'm
13 an administrator. I was a mayor for eight
14 years.

15 MEMBER MacFARLANE: I think that
16 it's really important that we get the criteria
17 from the non-PhD's in the room to move forward
18 politically.

19 MR. BRESLOW: Well, I think from
20 reading documents that go back 25 years and
21 interviewing many of you in the room, you need
22 a non-oxidizing environment. This country is

1 the only one looking at a site above the water
2 table. Everybody else is going below the
3 water table, which takes out oxygen. So, I
4 think there are some things that we did that
5 the rest of the world has moved on from. But
6 the non-oxidizing environment I think is the
7 most critical, as a non-scientist.

8 CO-CHAIR LASH: Did you plant
9 that?

10 MEMBER MacFARLANE: No, not at
11 all.

12 (Laughter.)

13 CO-CHAIR HAGEL: We have, I think
14 everyone knows, after our break here, we have
15 an opportunity to go deeper down into the so-
16 called Nevada experience here with people who
17 will shed some of their perspectives on all of
18 this.

19 Additional questions for Bruce?
20 Jon?

21 CO-CHAIR LASH: I have a very
22 quick one, Senator.

1 I think you have been clear about
2 this, but I just want to ask you again.
3 Essentially what you have described, at least
4 at the state level, is an opt-out rather than
5 an opt-in? You have said it needs to be
6 there, but the state needs to retain the
7 ability at the end of the process to say,
8 We don't like the way you handled this. We're
9 opting out."? Is that --

10 MR. BRESLOW: If you don't have an
11 opt-out at the end, then nothing matters
12 because everybody can do anything they want to
13 the project. As soon as you opt-in, all sorts
14 of things can happen. You don't have any
15 independence, any credibility anymore, to do
16 the oversight.

17 MEMBER PETERSON: A very quick
18 followup: opt-out becomes less practical
19 where a facility is running. So, you probably
20 mean opt-out at some point in time where you
21 have had the validity of debate and make one
22 decision as to whether or not the system has

1 been designed properly and has the proper
2 level of performance, and the state believes
3 that it can provide appropriate oversight and
4 fulfill its responsibilities with respect to
5 health and welfare of its citizens.

6 But, opting-out after the facility
7 is operating might --

8 MR. BRESLOW: That doesn't make
9 any sense, you're right.

10 MEMBER PETERSON: But the idea
11 that there should be a firm state veto as
12 opposed to the one that can be overturned or
13 no state --

14 MR. BRESLOW: Well, it's going to
15 be overturned by all the other states that
16 don't want to be in line. So, yes, there's a
17 time after complete site characterization, and
18 after the license for the application has been
19 reviewed on the state, regional, tribal, local
20 level, and is submitted to the NRC, there's no
21 going back. Then, it is up to them to
22 determine the safety.

1 But you still have to work on
2 oversight, but there has to be a cutoff point
3 for opting-out, and you have to feel
4 comfortable. You can't say you're going to
5 agree before a site has been characterized
6 fully.

7 MEMBER PETERSON: Because you want
8 to understand, also, from the perspective of
9 the national policy, that if you have a 40-
10 year timeframe and then it's only after 40
11 years that you learn that you've failed and
12 you have to restart, that's different from,
13 say, a 5-, 10-, or 15-year timeframe before
14 you make that decision whether or not you have
15 done the right thing and you should move
16 forward or not.

17 MR. BRESLOW: In a sense, you are
18 not off the hook, though, because the state
19 and the regional governments -- I'm not
20 looking in that county, but the local
21 governments, the tribes, are already figuring
22 out ways to spend the money on mitigation and

1 improving the roads and doing this. So, you
2 know, they're working, as I am, realistically,
3 as this is going forward.

4 But the state has the regulatory
5 responsibility and the oversight
6 responsibility. So, it's the state that
7 really has to say okay because the local
8 community is always going to look at it for
9 jobs, and the county is going to look at it
10 for first response, and as you go up the line.

11 CO-CHAIR HAGEL: Additional
12 comments, questions?

13 (No response.)

14 Thank you very much. We
15 appreciate your input, Bruce.

16 We are ahead of schedule by a few
17 minutes. So, we have a scheduled break at
18 9:45. Why don't we take a 15-minute break,
19 and then be back here no later than about 9:50
20 and we'll start?

21 Thank you.

22 (Whereupon, the foregoing matter

1 went off the record at 9:30 a.m. and went back
2 on the record at 9:49 a.m.)

3 MR. FRAZIER: All right, everyone,
4 we are going to get started again. If
5 everyone would take their seats, and the
6 Commissioners please take your seats?

7 So, this is the Nevada experience,
8 the local perspectives.

9 Senator Hagel, did you want to
10 make some comments first?

11 CO-CHAIR HAGEL: Tim, thank you.

12 I think we are getting everyone in
13 their appropriate places. I'll wait. We
14 can't start until our panel is ensconced, and
15 they are. We are missing a couple of
16 Subcommittee members, but we are going to get
17 started anyway.

18 As Tim noted, and we noted before
19 the break, this panel is about some specific
20 Nevada experiences from the local
21 perspectives. I'm going to introduce each of
22 our distinguished speakers and allow them to

1 make their presentations.

2 Then, maybe what we will do, since
3 we have four of you, is hold our questions
4 until each of you has had a chance to make
5 your contribution. Then, we will combine the
6 questions for the panel, if that is
7 acceptable.

8 All right, this panel, as I noted,
9 will provide a range of perspectives on the
10 Yucca Mountain Project. On the panel, we have
11 Darrell Lacy of the Nye County, Nevada,
12 Nuclear Waste Repository Office; John Gervers,
13 representing the Clark County, Nevada, Nuclear
14 Waste Division; Dr. Mike Baughman, a
15 consultant to the Lincoln County, Nevada,
16 Commission, and Judy Triechel, Executive
17 Director of the Nevada Nuclear Waste Task
18 Force.

19 Darrell, I will ask you to go
20 first.

21 Again, we will allow each of you
22 to make your presentations, and then we'll

1 combine our questions for the four of you.

2 Thank you.

3 MR. LACY: Okay. Thank you,
4 Chairman Hagel, and members of the Disposal
5 Subcommittee. I appreciate being invited to
6 present our perspective on disposal issues.

7 Like you say, I'm with Nye County,
8 Nevada. We are the site of Yucca Mountain,
9 and as such, we have a very vested interest in
10 this proceeding and how this will move in the
11 future. We understand this is not a siting
12 Commission, but the lessons learned from Yucca
13 Mountain I think will help a lot in this
14 process.

15 I will try to identify some of the
16 strengths and shortcomings from the efforts to
17 date and provide some of our perspectives on
18 how alternatives might work.

19 Officially, Nye County is neither
20 for nor against the Yucca Mountain repository.
21 We have taken a very science-based approach to
22 this and have been involved for over 30 years

1 in the characterization activities, providing
2 oversight as well as our own independent
3 science program.

4 When Yucca Mountain was designated
5 in '82, I mean the Nuclear Waste Policy Act
6 was designated in '82 and then Yucca Mountain
7 specified in '87, we have been doing our own
8 science program as well as oversight to look
9 at it from a perspective of constructive and
10 active engagement in the process. We have not
11 passed judgment as to whether we support the
12 project or not until we had an opportunity to
13 look at the science and pass judgment on it at
14 that stage.

15 Our active and constructive
16 engagement basically had several objectives:
17 to preserve the health, safety, and economic
18 well-being of the county, its citizens, and
19 environment. To see that the repository was
20 designed, built, and operated as safely and
21 successfully as possible, and to ensure that
22 transportation systems were put in place that

1 would provide for our economic development.

2 We believe that any community that
3 is looking at a geologic repository --

4 (Microphone malfunction.)

5 CO-CHAIR LASH: This probably
6 isn't the first time you felt you have been
7 deprived of a voice in this process.

8 (Laughter.)

9 MR. LACY: One of the things
10 driving Nye County's approach was that under
11 the Nuclear Waste Policy Act we really did not
12 have a veto ourselves as a local county. So,
13 we have been trying to work through our active
14 and constructive engagement to make sure that
15 we were involved and did have a say in at
16 least some of the important issues.

17 The Nuclear Waste Policy Act in
18 Sections 116 and 117 provided for local
19 involvement of the effectiveness of local
20 government and onsite oversight approaches.
21 This gave us an opportunity for funding to
22 help support our program.

1 Our independent science program,
2 we have drilled over 40 wells and done our own
3 science on hydrology, water, and geology in
4 the area to make sure that we were comfortable
5 with the outcome from DOE's own science. Our
6 science program was successful, and the data
7 from our science program was actually used by
8 DOE and the license application program that
9 was submitted.

10 But this is one of the positives
11 from the Nuclear Waste Policy Act and
12 involving the local government. And Bruce
13 Breslow mentioned some issues about DOE's
14 trust and credibility issues. Well, having it
15 in the statute forced their hand to involve
16 local governments in this, and we think that's
17 one of the positives from the Nuclear Waste
18 Policy Act.

19 We feel like local involvement is
20 important and should be endorsed in any future
21 repository program. The failures of the past,
22 prior to Yucca Mountain, there were several

1 programs, projects that did not succeed. A
2 lot of this comes back to some of the NIMBY
3 issues. Some of it is just the way the
4 process has been done.

5 But due to the perceptions of
6 high-level waste, you really don't see any
7 states, tribes, or other local governments
8 running around waving their hands saying that
9 they want to have a repository. So, the
10 process that you put in place is very
11 important, and from our perspective the soft
12 issues of education, outreach, and trust are
13 very important.

14 The current project, and DOE's
15 involvement was very focused on the hard
16 science, the geology, the transport of
17 radionuclides, and the softer issues I think
18 were overlooked a little bit.

19 Many people thought that when the
20 President designated the site in 2002, and the
21 Congress overrode the vetoes, that that would
22 put an end to the controversy, but it has not.

1 The controversy is political. I don't know
2 how to find a better solution or site than
3 Yucca Mountain right now. There's no perfect
4 site, and the acceptable sites have to be
5 looked at and put an engineered solution in
6 place that can help make sure it's as safe as
7 possible at whatever is the appropriate site.

8 From Nye County's
9 involvement/engagement, we feel like Yucca
10 Mountain has the potential of being a
11 technically-viable repository and also the
12 potential for significant economic development
13 in the County and State. However, we look at
14 it as a science-first approach and did not
15 want to negotiate for benefits until we were
16 certain that the citizens were protected.

17 We understand any future
18 possibilities for Yucca Mountain will be done
19 as a part of this new process because, as of
20 today, the site is closed, the people are
21 gone, and even if Yucca Mountain is attempted
22 to be revived, it's a several-year process.

1 Any new process has five steps.
2 We have to finalize the fuel cycle and define
3 what kind of waste stream will be disposed of.
4 We have to look at the regulatory basis,
5 whether it is a risk-based or a dose-based or
6 other options that can be looked at, and it
7 has to be a realistic regulatory basis. A
8 million years is not realistic from our
9 perspective.

10 Then, you go through the site
11 selection process, then the design and
12 licensing and construction, and finally, the
13 transportation repository operations. These
14 activities have to be integrated in local and
15 state.

16 One of the things that we have
17 done at the local level is an economic
18 industrial park area in front of the Yucca
19 Mountain site that we call a Yucca Mountain
20 Gateway Project. We have submitted those
21 plans to show some of the issues and areas
22 that Nye County has looked at as this process

1 moved forward. We have also developed a list
2 of ideas that we feel like would be necessary
3 to move a project like this forward.

4 Although we did not officially
5 support Yucca Mountain, we believe that the
6 level of acceptance necessary for hosting this
7 repository is about as good as you are going
8 to find in Nye County, because we have taken
9 this not as an anti or against approach, but
10 from a perspective that the science is good
11 and we would be pragmatic and accept the
12 program.

13 We feel like the government
14 agencies that are involved have to be at least
15 neutral. It is very difficult as you move
16 over a 30- or 40-year program. The State of
17 Nevada was actually supportive of the program
18 at one time, and that process changed. In a
19 30- or 40-year project duration, we have a
20 whole generation of politicians in Nevada that
21 have been elected based on the no Yucca
22 Mountain platform.

1 So, Mr. Breslow's contention that
2 giving it the opportunity to say no at some
3 point in the future definitely has some risks
4 to this project, if you look at Nevada's
5 experience and how things and the attitudes
6 have changed in the State over the last 30
7 years.

8 Back to some of your specific
9 questions, is a disposal facility necessary?
10 In our science, we say, yes, every process
11 that we have looked at -- we were very active
12 in the GNEP program, in reviewing those
13 options. Everyone has a waste stream that is
14 looking for a home, and you cannot forget the
15 Greater-than-Class-C and some of the other
16 types of waste that are sitting out there
17 without a home today.

18 The success of the dry cask
19 storage program has given us up to 100 years
20 to look at the solutions, but, ultimately all
21 processes have a waste stream and will need a
22 disposal site. And we feel like geologic

1 repository is the appropriate place for high-
2 level and spent fuels.

3 One of the advantages of Yucca
4 Mountain was the retrievable nature of the
5 repository. Some of the other alternatives
6 did not offer that.

7 Just a quick final, what are
8 alternative approaches? We feel like that
9 stranded waste needs to be dealt with very
10 quickly. We feel like defense waste is not
11 going to be reprocessed and can be looked at
12 as a separate approach from spent fuel.

13 As a longer-term approach, the
14 GNEP program did look at most of the practical
15 alternatives. I think that can be a starting
16 point from reprocessing or other options.

17 And finally, what is the process
18 to develop a disposal system? The Nuclear
19 Waste Policy Act was a good start. Some
20 things have been painful. Others have not
21 worked as well as they should. But a former
22 Director of OGRM basically summed it up in

1 three things that need to be changed from the
2 original Nuclear Waste Policy Act: continuity
3 of management; you can't change managers every
4 two, four, or eight years. There needs to be
5 access to the Nuclear Waste Trust Fund, and a
6 removal from the annual budget process, and
7 some sort of approach to deal with the
8 political changes and uncertainties that would
9 be addressed as you move forward.

10 Whatever we do, we have a
11 responsibility to our children and future
12 generations to deal with the nuclear waste
13 problem now. There was much discussion of
14 intergenerational equity when the Nuclear
15 Waste Policy Act was passed, and we can't
16 forget those issues.

17 Thank you.

18 CO-CHAIR HAGEL: Darrell, thank
19 you very much.

20 Now we will hear from John
21 Gervers, representing the Clark County,
22 Nevada, Nuclear Waste Division.

1 John, thank you.

2 MR. GERVERS: Thank you, Mr.
3 Chairman.

4 May I have the first three slides
5 in quick succession?

6 I'm John Gervers, representing
7 Clark County, Nevada. I've been involved with
8 the search for a high-level waste repository
9 for the past 30 years -- I find this hard to
10 believe -- representing State, tribal, or
11 local affected governments.

12 I would like to share some of the
13 lessons that we have learned about community
14 relations and public acceptance of a
15 repository.

16 I am going to be talking primarily
17 about the softer issues. Darrell Lacy said
18 the softer issues have been overlooked a
19 little bit, and I would agree that that is
20 certainly the case.

21 No. 4, while good science and
22 technical proficiency are essential to the

1 successful development of a nuclear waste
2 disposal system, public confidence in the
3 safety of the facility and the competence of
4 the managing agency is just as necessary.
5 Technical proficiency cannot substitute for a
6 lack of public confidence. Both are essential
7 components of a nuclear waste disposal system
8 and require the attention of policymakers,
9 planners, and managers of such systems.

10 The key lesson to be learned from
11 the Nevada experience is that public
12 acceptance is an essential ingredient for
13 success of any nuclear waste storage or
14 disposal system. Too often, scientists and
15 engineers believe that the only real challenge
16 of a disposal system is to meet an acceptable
17 standard of safety through a competent
18 assessment of the technical capabilities of a
19 site. They often overlook or dismiss as
20 irrational the concerns of people who live and
21 work near the site and along the
22 transportation routes, and simply attribute

1 objections to a lack of knowledge or
2 understanding of a complex technical process.

3 Citizens, however, and the local
4 and state governments that represent them, are
5 legitimately concerned with the ability of
6 managers to protect public health and safety
7 and address social and economic impacts.

8 Their responses are quite rational and deserve
9 consideration from managers of nuclear waste
10 disposal systems.

11 Citizens are not alone in their
12 concerns about radiation risks, I might point
13 out. Insurance companies consider the risks
14 of radiation releases to be unacceptable and
15 consistently decline to cover nuclear risks.
16 The federal government has had to step in with
17 the Price-Anderson Act.

18 The private capital markets are
19 also unwilling to make reactor construction
20 loans without federal government guarantees of
21 their investments.

22 Failure to acknowledge community

1 concerns can lead to political resistance and
2 public demonstrations. In the early 1980s,
3 the second repository program, in particular,
4 was beset by protests from people who felt
5 their concerns had been marginalized. To
6 accommodate such concerns, the Nuclear Waste
7 Policy Act authorized the creation of affected
8 units of local government and empowered them
9 to monitor the siting process, identify
10 potential impacts, comment on siting
11 activities, and conduct public outreach. The
12 involvement of local governments in the
13 repository siting process has enhanced public
14 confidence and has had a dampening effect on
15 public protests aimed at Yucca Mountain.

16 No. 5, please.

17 Nonetheless, the resistance to
18 Yucca Mountain in Nevada has deeper roots than
19 mere lack of representation. There has been
20 bipartisan opposition to the repository from
21 all leading State officials and from over 70
22 percent of the Nevada population since at

1 least 1987.

2 This resistance differs markedly
3 from the support shown by Nevadans for the
4 Nevada Test Site and its contribution to
5 national security. Why, then, did Nevadans
6 turn against the repository?

7 First, as Bruce Breslow mentioned,
8 in the 1960s, DOE's predecessor, the Atomic
9 Energy Commission, assured Nevadans that
10 fallout from above-ground nuclear bomb testing
11 would be merely inconvenient and would not
12 endanger health. This proved to be false.

13 Second, the DOE legacy of
14 environmental contamination at defense sites,
15 which is now being cleaned up at enormous
16 expense, has left doubts about the
17 Department's long-term management
18 capabilities.

19 Third, DOE changes to the Yucca
20 Mountain siting guidelines to make the
21 guidelines fit the site, rather than the site
22 fit the guidelines, have undermined confidence

1 in the integrity of the siting process.

2 Fourth, Nevadans have noted that
3 the economic benefits of nuclear power are
4 largely in the east of the United States,
5 while the costs of accepting long-term
6 disposal risks would be exclusively in Nevada.
7 This inequity was reflected in a media cartoon
8 in the late 1980s showing a huge pipeline from
9 the East Coast spilling nuclear waste into
10 Nevada.

11 Fifth, Clark County considered the
12 economic risks of a repository to be
13 unacceptable to its tourism industry. Las
14 Vegas draws visitors from all over the world
15 and is very vulnerable to media reports that
16 might undermine visitors' confidence in their
17 safety.

18 After 9/11, for example, the
19 perception of risk was enough to cause
20 extensive cancellation of vacation plans and
21 business conferences in Las Vegas, resulting
22 in 20,000 layoffs and economic losses in the

1 billions of dollars.

2 Finally, Nevadans were outraged in
3 1987 when studies of three potential sites on
4 the basis of comparative scientific merit were
5 abandoned in favor of a political decision to
6 consider only Yucca Mountain. The Nuclear
7 Waste Policy Amendments Act of 1987 became
8 known as the "Screw Nevada Bill" and resulted
9 in a bipartisan alignment of political forces
10 in Nevada to oppose the repository. Nevadans
11 felt betrayed by a flawed and unfair site
12 selection process.

13 No, 6, please.

14 The DOE response has been to deny
15 or minimize the risks of nuclear waste
16 disposal and to attribute people's fears to
17 misinformation or ignorance of technical
18 processes. DOE largely adopted an attitude of
19 we know best because we have the technical
20 expertise, and the repository is inevitable,
21 so get used to it.

22 This attitude was a carryover from

1 the culture of the former Atomic Energy
2 Commission, which valued achievement of the
3 mission over attention to stakeholder concerns
4 about health, safety, and the environment.

5 With one significant exception, during the
6 tenure of Ward Sproat as Director of the
7 Nuclear Waste Program from 2006 to 2008, the
8 Department has consistently withheld support
9 and respect for the oversight activities of
10 State and local governments in Nevada.

11 Nevada's opposition to the
12 repository has too often been seen at DOE as
13 willful obstructionism with the consequence
14 that few efforts have been made to listen to
15 local concerns or to remediate them.

16 Among other actions, DOE
17 recommended a zero budget for local government
18 oversight activities, tried unsuccessfully to
19 withhold appropriated funds, required annual
20 work plans, and denied approval of activities
21 deemed inappropriate, initiated audits of
22 expenditures made under previously-approved

1 work plans, failed to pass through funds
2 during Continuing Resolutions in Congress, and
3 sought legislation to preempt State and local
4 regulatory authority. Much of this history
5 improved under Ward Sproat's leadership,
6 earning greater respect and cooperation from
7 affected local governments.

8 No. 7, please.

9 The Nuclear Regulatory Commission
10 has made a concerted effort to distinguish its
11 role from that of DOE. NRC Commissioners and
12 staff made visits to individual counties to
13 explain their function and listen to local
14 concerns. NRC held training sessions to
15 familiarize potential interveners with
16 licensing procedures and made senior staff
17 accessible to local government delegations.

18 The Construction Authorization
19 Board accepted the vast majority of
20 contentions submitted by State and local
21 government interveners. This generally-
22 cooperative stance has contributed to a more

1 productive dialog with affected governments
2 than has characterized relations with DOE.

3 No. 8, please.

4 The United States Congress also
5 vacillated in its commitment to consultation
6 and cooperation with local communities. The
7 Nuclear Waste Policy Acts of 1982 and 1987
8 acknowledged the critical role of state and
9 local governments in the siting process, but
10 many subsequent congressional bills sought to
11 preempt or constrain the role of affected
12 governments. Appropriators zero-funded the
13 oversight programs in fiscal year 1996 and
14 1997 and created a lengthy list of
15 prohibitions and provisos governing the use of
16 the funds.

17 Finally, No. 9, recommendations.

18 We ask the Commission to consider the
19 following recommendations which we think might
20 enhance the siting process for future nuclear
21 waste systems.

22 First, that DOE be replaced by an

1 agency that is not deeply rooted in the values
2 and attitudes of the former Atomic Energy
3 Commission.

4 Second, that the mission of the
5 implementing agency be defined in both
6 technical and institutional terms with equal
7 attention to resolving the scientific and
8 engineering challenges and to addressing
9 public concerns about the proposed facility.

10 Third, that safety be the guiding
11 principle of the implementing agency and that
12 siting guidelines be developed in concert with
13 stakeholders and adhered to by the agency,
14 even to the extent of abandoning a site if it
15 cannot meet those guidelines.

16 Fourth, that affected governments
17 be recognized as parties to the siting
18 decision with legitimate interest in the
19 siting process.

20 Fifth, that future siting efforts
21 be guided by the principle of risk and reward
22 with clear benefits accruing to communities

1 that are prepared to accept the risks of long-
2 term storage or disposal.

3 Sixth, that adequate funding be
4 consistently provided to affected governments
5 to undertake independent oversight activities
6 on behalf of their citizens.

7 Seventh, that attention be given
8 to the experience of other countries where
9 initial efforts to impose a site on local
10 communities met resistance and had to be
11 revised to include full engagement with a new
12 set of communities. I'm thinking of Canada,
13 France, Germany, Sweden, and the United
14 Kingdom.

15 Thank you, Mr. Chairman, for this
16 opportunity to address the Commission. I
17 would be glad to answer questions, and I would
18 refer you, also, to the longer paper that was
19 submitted to the Commission.

20 CO-CHAIR HAGEL: John, thank you
21 very much.

22 Next we will hear from Dr. Mike

1 Baughman, a consultant to the Lincoln County,
2 Nevada, Commission.

3 Dr. Baughman?

4 DR. BAUGHMAN: Thank you, Mr.
5 Chairman, members of the Subcommittee,
6 Commission.

7 On behalf of Commissioner Paul
8 Matthews, the Chairman of the Board of Lincoln
9 County Commissioners, and the rest of the
10 Commissioners, we do thank you for inviting us
11 to come here today and offer the perspectives
12 of Lincoln County.

13 We do believe that local
14 governments are the place where ultimately the
15 impacts of projects such as this, this is
16 where they end up. You hear from a lot of
17 folks at state levels, the federal level,
18 industry folks, and others. But, at the end
19 of the day, it's local governments who are
20 responsible for providing for the health,
21 welfare, and safety, and the economic well-
22 being of their residents.

1 So, we take this responsibility
2 very importantly. They consider it to be a
3 fiduciary responsibility to watch out for
4 those interests. That is what motivates them
5 to be involved in the way they have.

6 Lincoln County is a very large,
7 rural area. It's 10,600 square miles, a
8 population of about 4600 people. About 98
9 percent of that land area is administered by
10 the federal government, primarily by the
11 Bureau of Land Management, but, also,
12 significant presence by the Department of
13 Defense and the Department of Energy.

14 And in Lincoln County we also have
15 the Union Pacific Railroad mainline that comes
16 across the country through our area and ends
17 up at the Port of Los Angeles. Then, we also
18 are immediately downwind from the Nevada Test
19 Site, and we are an area that is qualified for
20 compensation from the federal government for
21 downwind effects.

22 And finally, I would note that

1 Lincoln County is crossed by what's called the
2 Caliente Rail Alignment. This is the
3 preferred rail alignment to provide access to
4 the Yucca Mountain site by DOE, and it's about
5 150 miles of new rail that would cross the
6 County in terms of bringing waste to the Yucca
7 Mountain site. That rail line does come into
8 the City of Caliente, which is our only
9 incorporated community, and then crosses
10 across the length of the County. So, with
11 that background, that is really what engages
12 Lincoln County and the City of Caliente in
13 looking at the impacts of this project.

14 I would note that we have been
15 involved in this exercise for 26 years. The
16 underlying thesis of our presentation in the
17 long form or a short form that you have, which
18 I'm going to very quickly summarize, is that's
19 a very long time for anyone to have to deal
20 with the uncertainty of whether or not a
21 project is going to go forward of this
22 magnitude.

1 That, in and of itself, is quite
2 unfair, and it's an impact that largely was
3 unanticipated and it's largely unmitigated.
4 These local government officials and their
5 residences deal with this uncertainty every
6 day, and extend that over 26 years and it's
7 almost unfathomable.

8 With regard to the questions that
9 were posed or asked of us by the
10 Commissioners, with regard to question 1 in
11 terms of whether or not siting is required or
12 a disposal facility is required, we think
13 definitely yes, it is going to be required.
14 Deep geologic has been the alternative that
15 has been identified and, I think with
16 unanimity among the scientific community, is
17 an alternative that has to be considered. We
18 see no way to avoid deep geologic disposal at
19 some point.

20 With regard to other alternatives
21 that are available, they have been unsurfaced;
22 they have been studied. I don't know that

1 there's any alternative that hasn't been
2 conceived of. The County will leave that to
3 the experts in terms of what they think the
4 other alternatives are.

5 But with regard to process, that's
6 really what we have lived with for 26 years,
7 is the process of trying to site a large
8 repository in Nevada and all the related
9 infrastructures, such as transportation. So,
10 I would like to dwell on that.

11 We did provide you, again, long
12 form, short form, that gets into a whole
13 series of recommendations. But I think,
14 again, the overlying area of concern for us is
15 uncertainty. That uncertainty really vests
16 itself in three areas.

17 One is political uncertainty,
18 financial uncertainty, and then the
19 uncertainty associated with, that has been
20 placed upon our landowners and private land
21 rights-holders, if you will.

22 With regard to political

1 uncertainty, this program, despite what anyone
2 of any position of authority in the government
3 has ever said, and particularly our
4 politicians, that they want a scientific
5 solution to this issue, this has been purely
6 driven by politics.

7 You know, for us at the local
8 level, the political approach to resolving
9 this very technical issue results in a
10 significant erosion of trust and confidence
11 that anybody really knows what they are doing.
12 With all the espousing of the scientific
13 integrity of the site by the Department of
14 Energy, and then to have an Administration
15 come along and say, "Well, it doesn't work,"
16 well, where does that leave the average
17 citizen in terms of trusting his government
18 that they really know what they're doing with
19 regard to providing for public health and
20 safety?

21 At the local level, the political
22 divisiveness, and even within the State, that

1 results from a program like this has been very
2 difficult to manage. We note in our
3 presentation that in the mid-nineties the
4 Attorney General of Nevada sought to throw two
5 of my County Commissioners and the entire City
6 Council out of office for daring to recommend
7 to the DOE that they take some facility
8 management/risk management steps that would
9 have moved the waste in terms of intermodal
10 facilities out of Caliente, down the canyon a
11 ways, and would have institutionalized some
12 emergency response capabilities, which they
13 felt would have helped them in the long run.

14 As a result of that resolution
15 that was passed by the County Commissioners
16 and the City Council, the Attorney General
17 took action to throw all those folks out of
18 office. It didn't succeed, and she was
19 ultimately censored by the Nevada Legislature
20 for kind of overstepping her bounds. But
21 political divisiveness and the politics that
22 run this program is very much a serious

1 concern at the local level.

2 The uncertainty associated with
3 finances. Mitigation -- well, let me talk
4 about oversight first. Local governments,
5 it's been said by the other local government
6 here, by Bruce, that local oversight, State
7 oversight is very important. We agree with
8 that. That has been a very important
9 component of our program. I have provided you
10 with a bibliography of research that we have
11 undertaken which helped our County understand
12 what the possible implications of this may be,
13 helped them to frame the comments over the
14 years that they made to the federal government
15 on this program.

16 And that oversight has been very
17 important in helping our local residents
18 understand really what this program means for
19 them. But that oversight has been fraught
20 with uncertainty in terms of, will we get the
21 funding this year or not? You know, there was
22 a year or two when Congress actually withheld

1 funding because of some issues.

2 We had issues, as has been
3 previously mentioned, with DOE trying to kind
4 of narrow the focus of work that we are doing
5 and suggesting we couldn't do certain kinds of
6 things. Interestingly enough, participation
7 in planning and an impact analysis for
8 transportation is not addressed in the Act.
9 So, that authorization had to be included in
10 each year's appropriations language.

11 Our ability to participate in the
12 licensing process is not included in the Act.
13 So, that also had to be included each year in
14 the appropriations process.

15 So, each year there was a great
16 deal of uncertainty as to whether or not those
17 specific inclusions were going to be
18 incorporated and/or whether Congress was going
19 to fund the program at all, and/or at what
20 level. It's pretty hard to run a continuous
21 oversight program that has merit with that
22 kind of uncertainty.

1 With regard to mitigation, while
2 we may have been able to work with DOE to
3 start to move towards mitigation impacts, for
4 example, of a rail corridor across the State,
5 DOE could never commit to anything because
6 they operate on annual appropriations. While
7 they may be authorized under the
8 authorizations that set them up as an agency
9 and under the federal administrative
10 procedures, and whatnot, to undertake
11 mitigation activities, they couldn't commit to
12 anything because they had no idea how much
13 funding they would get in order to do things.
14 That is very untenable for local government
15 trying to mitigate the impacts in an area.

16 Finally, with regard to benefit-
17 sharing, I agree wholeheartedly with the
18 concept that we've got to figure out in this
19 program how to share the national benefits of
20 managing spent fuel and high-level waste,
21 where we are going to move the risk from the
22 locations where all this waste is presently

1 resident to a central location where perhaps
2 there is no waste and no attendant risk
3 associated with either production of the waste
4 or existing temporary storage of it. But that
5 location is going to provide a service to the
6 rest of the nation, and the balance of this
7 country where this waste is coming from is
8 going to achieve a benefit of getting rid of
9 it. We've got to figure out how to share that
10 benefit. We've got to share it with the host
11 locales and perhaps even the transportation
12 locales along the way that don't have any
13 waste generated in their area or coming
14 through their area.

15 We suggest in our paper that, if
16 the DOE had figured out how to do this or the
17 nation would have figured out how to do this
18 in 1998 in terms of benefit-sharing -- the DOE
19 was spending on the order of \$3.5 to \$4.5
20 million a year, whether they made any progress
21 or not seemingly, for many years. Well,
22 that's \$3.5 to \$4.5 billion. If you would

1 have put that on the table in 1998, you would
2 probably be nearly completed with the process
3 today. At a minimum, that would have resulted
4 in a dialog in Nevada that we have been unable
5 to have because the \$10 to \$20 million that
6 was put on the plate is laughable. So, we
7 would certainly encourage the Commission to
8 consider a level of compensation that does
9 provoke a dialog.

10 Finally, with regard to the
11 uncertainty associated to our private
12 landowners, the DOE proposes to cross many
13 private properties with the rail corridor.
14 They only offered to purchase an easement for
15 the 100 to 200 feet that they need for a rail
16 line. If they are crossing a person's
17 residential property, they're crossing an area
18 that's currently irrigated, you know, they are
19 unwilling to compensate or they were unwilling
20 to discuss compensation for the balance of the
21 properties, for example, that were impacted,
22 choosing only to compensate for the area they

1 took. And we would recommend that any process
2 that is employed look at mitigating the whole
3 in terms of the impact.

4 Now there's a whole series of
5 other recommendations in our written papers.
6 I would be happy to answer any questions when
7 we get there. Thank you.

8 CO-CHAIR HAGEL: Mike, thank you
9 very much.

10 Now, to complete the panel's
11 presentation, Judy Triechel, Executive
12 Director of the Nevada Nuclear Waste Task
13 Force.

14 Judy, thank you.

15 MS. TREICHEL: Thank you.

16 There's been a lot of talk about
17 money during this presentation and the
18 discussions, and so forth. The Nevada Nuclear
19 Waste Task Force was never funded with public
20 money or congressional appropriations, and so
21 forth. We existed out of donations and
22 contributions from people that really thought

1 this was important and thought it was very
2 important for the public to be involved. So,
3 we probably have a very different perspective
4 from a lot of people, but we have been here
5 since the thing began.

6 The questions that you asked, is a
7 facility needed, I agree, yes, at some point
8 it is. I don't think that the country or this
9 Board or the federal government is ready to
10 launch into a discussion of siting or anything
11 like that. I think the country needs to have
12 a discussion about really what the definitions
13 of the problem are, what the definition of a
14 solution is.

15 We talk a lot about achieving
16 success. What's success? I think that there
17 are a lot of people out there who have very
18 different ideas about what a successful
19 disposition of spent nuclear fuel is. So, we
20 have to begin at the beginning on this whole
21 thing.

22 There was a question about

1 alternatives. I think one of the things we
2 have to do is have lessons learned from Yucca
3 Mountain, which we have not had. The
4 Department of Energy seems either unwilling or
5 unable or incapable of learning those lessons.

6 We already have the Department of
7 Energy through its nuclear energy program with
8 a campaign for used fuel disposition beginning
9 with a meeting that's not even open to the
10 public. We're back to business as usual from
11 the 25 years that we have all been involved in
12 this thing, and I think everything has to
13 change before we start again.

14 What should a disposal system look
15 like or the development of one? It should
16 look entirely different from what we have had
17 so far.

18 Right now, as I said, I think
19 we're unready to go ahead with that. So, we
20 are using the fallback position, which is to
21 stay with dry cask storage. That's working
22 right now, but I don't think it's as simple as

1 it sounds.

2 One of the things that I have been
3 proposing, but I haven't heard anything from
4 anyone or I haven't seen any interest, is
5 we're using dry cask storage and we're
6 probably going to be using a whole lot more of
7 it. We know how to put waste into a dry cask.
8 Nobody's ever taken it back out.

9 I would suggest that part of the
10 research and development be devoted to taking
11 a dry cask that has been loaded for at least
12 10 years, unloading it, and reloading the
13 stuff into something else. We have had casks
14 that have problems, and the final decision on
15 those has always been that it was safer to
16 leave it in a cask with problems than it was
17 to move it.

18 But all of this waste that's in
19 dry casks now is eventually going to have to
20 be repackaged. I think we ought to know what
21 we're looking at. I think there's going to be
22 problems with that that we haven't anticipated

1 yet, as we're building more and more and more
2 dry casks.

3 I also think that when it comes to
4 setting a standard, which has to be done well
5 before -- first, you have to have the public
6 discussion about, what are we going to do with
7 nuclear waste, what's important to the public,
8 what does the country think is important? And
9 it may involve a discussion about nuclear
10 power as well.

11 But after we have decided where we
12 want to go, then the first thing that has to
13 happen is you have to have standards and
14 regulations that aren't just suggestions,
15 aren't just guidelines, but are hard-and-fast
16 rules that have to be met. And if a site
17 doesn't meet those, you walk away from the
18 site. That's necessary not only for safety,
19 but certainly to develop public confidence.

20 The public's got to know that, if
21 there's anything wrong with that site, if you
22 set a rule and it doesn't meet it, that it's

1 not going to go ahead and the rules get
2 fudged, and so forth, because Nevada has a lot
3 of experience with having that happen.

4 I would say that a standard needs
5 to aim for zero release. I don't think that
6 you take an action, moving nuclear waste,
7 doing anything with nuclear waste, that isn't
8 substantially safer than what you have now.
9 Right now, we're comparing everything against
10 dry cask storage. There's very little release
11 coming out of dry casks. They've been
12 accepted. They're being used.

13 A repository, even with all of the
14 transportation that may be involved in a
15 repository, certainly there's a lot, if it's
16 a western repository, is a risk. Then, when
17 you finally get there, you can't have a
18 repository sited near potable water, where you
19 know that at some point that's going to get
20 contaminated.

21 A repository has to be or a
22 nuclear waste disposition, even if it's sub-

1 seabed, has to be an improvement on what we
2 have now. Otherwise, why would you get into
3 the expense, the time, the effort, everything
4 that goes along with a decision like that?

5 And I guess I would finish by
6 saying that we did talk a lot about the word
7 "success". What's a successful project?
8 Would success mean that you finally rammed
9 Yucca Mountain through, that you finally got
10 a repository sitting there after all that's
11 gone on?

12 I would say that, if you had a
13 successful program in which the public, the
14 people of Nevada and across the nation that
15 had a concern or an interest in this had been
16 fully involved, you would have had success
17 because Yucca Mountain would have been dropped
18 from the discussion years and years and years
19 ago. You would have saved billions of
20 dollars' worth of money. You would have saved
21 the battles that have gone on now and a lot of
22 the frustration, and we wouldn't be at this

1 point.

2 We would have some sort of level
3 of public confidence. We would be ready to go
4 ahead and actually look for another possible
5 solution to this problem. But, first, we have
6 to all agree on what the definitions of those
7 terms are, and especially the term "success".

8 So, I also look forward to a
9 discussion. I am ahead of my time, but I
10 would rather have a question and answer and
11 full discussion going on.

12 Thank you.

13 CO-CHAIR HAGEL: Judy, thank you
14 very much, and also for protecting that
15 greatest-of-all virtues, brevity. We
16 appreciate that. I think your application of
17 our focus and time is best served on the
18 discussion.

19 So, to the four of you, we
20 appreciate your presentations.

21 Questions?

22 (No response.)

1 John, let me begin. You mentioned
2 in your recommendations that, among the
3 recommendations, that DOE should be replaced
4 as the primary department/agency. What
5 thoughts do you have as to what kind of a
6 replacement should there be? What are your
7 thoughts? Inventing a new institution, an
8 existing institution?

9 Excuse me. You might want to grab
10 the microphone. Oh, you've got one at your
11 desk? Okay. There you go. Thanks.

12 MR. GERVERS: Is that okay?

13 CO-CHAIR HAGEL: Yes, thank you.

14 MR. GERVERS: I think that the key
15 consideration is the longevity of the
16 institution. There's been some suggestion
17 that a private or even a federal corporation
18 should be created to manage the nuclear waste
19 disposal system. I think it probably needs to
20 stay within the United States Government.

21 And that creates a problem
22 because, if not DOE, who? I'm not sure that

1 I have an answer to that. It's one that I
2 would refer to you.

3 I do think, however, that relying
4 upon a private group to manage nuclear waste
5 for the period of time that is involved is
6 probably not the best way to go, and that you
7 do need something that is associated with the
8 government and which has a better chance of
9 being durable over the long term.

10 CO-CHAIR HAGEL: Thank you.

11 Allison?

12 MEMBER MacFARLANE: I have two
13 questions, one for Judy and one for Mike. So,
14 Judy first.

15 And it's basically the same
16 question that Senator Hagel just asked. So,
17 in your writeup you say that a commercial
18 facility or a private or public/private entity
19 should not be the agency that manages nuclear
20 waste disposal. So, therefore, we're back to
21 the government. So, do you think DOE should
22 manage it?

1 And then I'll ask Mike this
2 question.

3 MS. TREICHEL: Well, I certainly
4 think it needs to stay within the federal
5 government. It has all of these aspects,
6 including national security. It's a huge
7 project, and it's a federal project. It
8 should stay in the federal government.

9 I think the worse thing that could
10 happen would be if it went to a profit-making
11 organization where you had profits involved
12 competing with safety. And as I said in the
13 paper, a lot of times when you have a
14 commercial operation, the operators get a lot
15 of flexibility, but the public does not. So,
16 you lose there.

17 But as to what part of the
18 government, I think that depends on what we
19 decide. If we're going to have deep geologic,
20 perhaps the USGS. If we're going to have some
21 sort of an engineered facility, then it may be
22 the Corps of Engineers. It may be parts of

1 different federal entities, but I do believe
2 it has to stay in the U.S. Federal Government.

3 MEMBER MacFARLANE: Okay, great.

4 And then, for Mike, in your
5 writeup, your point No. 1, one of your
6 specific recommendations is that we should or
7 somebody should consider mechanisms for
8 ensuring that locally-derived information is
9 considered.

10 So, what are those mechanisms?

11 DR. BAUGHMAN: Well, you know,
12 obviously, if it's a federal program, you can
13 somehow legislate that. But we also recommend
14 that we de-politicize this program. So, I
15 would be a little bit reticent to think that
16 we need more legislation to resolve a
17 particular fix.

18 But if it is going to remain a
19 federal program, I think that you could
20 somehow legislate that. You know, there's
21 difficult recourse for local governments if
22 the DOE doesn't pay attention, or whoever the

1 entity is that is doing this doesn't pay
2 attention.

3 I think it perhaps is related to
4 the issue that you just brought up with Judy
5 in terms of who runs the program. You have
6 heard it throughout different people's
7 testimony today that things were different
8 under Ward Sproat's helm at the ship.

9 MEMBER MacFARLANE: Uh-hum. So,
10 what was different? What did he do that was
11 so good?

12 DR. BAUGHMAN: Ward Sproat brought
13 a very strong private industry perspective to
14 running the repository program. That private
15 industry perspective infiltrated its way right
16 down to relations with local governments,
17 where the folks that are out doing power
18 plants in communities know how to work with
19 local government. They know how to seek and
20 consider the advice of local governments in
21 how to deal with issues. Ward Sproat had that
22 same mentality.

1 So, I do think that a quasi-
2 federal/private, private approach to this
3 probably would have got us much further down
4 the road, had we done that many, many years
5 ago.

6 MEMBER MacFARLANE: Okay. So,
7 you're in opposition to Judy?

8 DR. BAUGHMAN: All the time.

9 (Laughter.)

10 No, that's not true.

11 MS. TREICHEL: Yes, it is.

12 (Laughter.)

13 CO-CHAIR HAGEL: Susan?

14 MEMBER EISENHOWER: Yes, thank
15 you.

16 First of all, it's been a terrific
17 panel. Thank you very much for your comments.
18 I think all of us have learned a great deal
19 from this.

20 I think, actually, Darrell I
21 believe made the point that Yucca Mountain was
22 at one point supported. So, I've got kind of

1 a general question for all of you, though,
2 Mike, you did touch particularly on the
3 reliability question, the reliability of the
4 supply of money, et cetera.

5 But it's sort of a two-part
6 question here. How much of a difference would
7 it have made if there were still a couple of
8 other repository sites around the country in
9 today's context?

10 And also, would it have made a
11 difference in terms of, would it have changed
12 this 70 percent of Nevadans' viewpoint, had
13 their been a reliable flow of money? How
14 would you rank that as a factor?

15 But I am very interested in this
16 regional question, I think, Mike, that you
17 mentioned.

18 So, comments on this, please?

19 MR. LACY: Well, the original
20 Nuclear Waste Policy Act was providing for a
21 couple of repositories in the East and the
22 West, as well as interim storage and other

1 issues. By focusing specifically on Nevada
2 and taking the other sites off the table, it
3 did play into the perception of the "screw
4 Nevada" portion of the bill, in that Nevada
5 was taking an unacceptable risk for very
6 little benefit, and there's no nuclear power
7 plants in Nevada. So, none of the waste came
8 from Nevada. So, a lot of these things just
9 compounded upon it.

10 MEMBER EISENHOWER: Well, I
11 understand that, but the question is, if we
12 still had other sites on the table today,
13 would it today make a difference in Nevada
14 around this issue?

15 So, on the other point, if we
16 could project this into -- I can understand
17 how this accumulated, so that there are
18 tremendous local grievances. But the question
19 is, if, for instance, a panel like this were
20 to suggest multiple sites around the country,
21 is this really going to help in the siting
22 process for some other commission? Do you see

1 what I'm saying? Is that a prerequisite for
2 a national policy, is to have multiple sites?
3 And we're trying to learn from your experience
4 here.

5 MR. GERVERS: I think definitely
6 that you have to start off that way. That's
7 the way we started. We started with six sites
8 around the country in six different states.
9 Those were gradually winnowed down to three
10 sites, and the three sites probably should
11 have been kept on the table long enough to
12 determine which of those three sites was
13 considered to be the technically most
14 acceptable.

15 And that didn't happen. The
16 process was foreshortened by an action in a
17 congressional conference committee, which
18 basically went in with a proposal to extend
19 for one year to make a decision between the
20 three sites. And it came out with let's not
21 bother with that; let's just go straight to
22 Nevada. And that's what I think upset people

1 in Nevada.

2 MR. LACY: Even though there were
3 technical bases for that decision, the process
4 was shortened and --

5 MR. GERVERS: Yes.

6 MEMBER EISENHOWER: I understand.
7 Let me press on this one more time.

8 Do you think in the future for a
9 national policy, do we have to have regional
10 distribution of some sort, if it's technically
11 and scientifically possible?

12 MR. LACY: Yes. I think that
13 addresses some of the issues, the fairness
14 issues as well as the issue that I think John
15 was mentioning, that if you run across a deal-
16 killer for a site, if you have multiple sites,
17 then you can kill one of them without killing
18 the total program.

19 When you were down to Yucca
20 Mountain as the sole site, there were at least
21 perceptions at some level that compromises
22 were made on safety because we only had one

1 site.

2 DR. BAUGHMAN: If I might just
3 suggest, if we had three sites today that were
4 all seemingly suitable, and we were trying to
5 go forward and decide which one to put this
6 at, our State would be saying put it someplace
7 else. So, I don't think it would have made
8 any difference whatsoever.

9 MEMBER EISENHOWER: Thank you.
10 That's helpful.

11 CO-CHAIR HAGEL: Per?

12 MEMBER PETERSON: A question for
13 Mike Baughman. I think there will be frequent
14 questions from myself, Jonathan, and others,
15 that relate to institutions, processes, and
16 standards.

17 Going to process, you pointed out
18 that the Nuclear Waste Policy Act, as it was
19 drafted, actually did not foresee a number of
20 things that were important from the
21 perspective of state and local oversight, a
22 specific example being the need to have

1 oversight of licensing. That was not
2 included. And therefore, you had to, through
3 appropriations language, you know, provide
4 funding for these functions.

5 And again, it is difficult to
6 envision being able to craft perfect
7 legislation if you have to foresee in advance
8 every single detail. This would seem to be
9 the sort of thing that should be negotiated at
10 some stage in the process where you've gone
11 far enough that you have the people who have
12 experience and capability who can identify
13 what are the needed oversight functions and
14 reach some legal agreement at that point,
15 perhaps through some form of contract.

16 Would that be a more reasonable
17 approach forward? Because I just have a
18 difficult time seeing how you can anticipate
19 in advance every single detail and get it
20 right, as opposed to having a process that
21 will allow you to identify those as you go
22 along and take the correct action when you

1 reach that point.

2 DR. BAUGHMAN: Well, I would agree
3 certainly a process that allows for the
4 identification of those and adaptation to
5 those things as they arise would be certainly
6 important.

7 But let's face it, after 30-plus
8 years with Yucca Mountain, and untold
9 exercises of licensing nuclear power plants
10 and decades of experience with trying to do
11 this before at other sites, and the WIPP
12 experience, I'm not sure what stone is left
13 unturned. It's just a matter of, what's the
14 will of putting it all together? And that's
15 what's on your plate.

16 (Laughter.)

17 MR. LACY: One quick addendum to
18 that. I think one of the things that was
19 mentioned was that DOE was the problem as much
20 as the statute. The statute could never
21 foresee every foreseeable circumstance.

22 In the situation that we were

1 dealing with, DOE did not want the local
2 governments involved because we were a
3 nuisance from their perspective. So, Congress
4 had to come back and basically force them to
5 involve us. I think that was the problem, and
6 that may go back just to the fact that DOE was
7 the agency running the program.

8 MR. GERVERS: I mentioned right at
9 the end that looking at the experiences of
10 some of the other countries would be very
11 valuable because at least five other countries
12 have had the experience of going about this
13 more or less from the standpoint of
14 identifying the site and then defending it in
15 terms of its technical suitability.

16 And in each case, they ran afoul
17 of the political realities in the area of the
18 potential site. So, they had to go back to
19 the drawing boards and start again. They
20 learned something from that experience.

21 I think that we are now in the
22 process of learning something from our

1 experience. It's just that ours went on a bit
2 longer and cost a whole heck of a lot more
3 money.

4 It's too much to expect that a
5 bill like the Nuclear Waste Policy Act is
6 going to address all of the outstanding
7 issues. But now that we've gone through this,
8 we do have a chance to make some corrective
9 actions and perhaps to start again on a new
10 footing.

11 MEMBER PETERSON: John, could I
12 follow up a bit more on that point, because I
13 think this question of oversight is a critical
14 one? There have been places where we have
15 started to learn that, in fact, having
16 effective external oversight can improve the
17 performance of systems.

18 That is certainly the case in the
19 reactor world, where what utilities have found
20 is that, by and large, the goals that the NRC
21 has align also with their goals of having high
22 availability and high reliability. In fact,

1 the review and oversight provided by the NRC
2 is a positive thing. In fact, the conclusions
3 from the NRC relate to stock prices because of
4 that.

5 I would expect that probably that
6 has proven to be the same case with
7 transportation. That is, a proactive,
8 collaborative relationship between those
9 agencies that have responsibility for
10 oversight actually facilitates having the
11 transportation system work better.

12 Would that potentially be the same
13 thing from a perspective of developing
14 repositories? That is, do not take an
15 antagonistic approach to oversight, but rather
16 embrace it and use it as a tool to improve
17 practice?

18 MR. GERVERS: Absolutely. And I
19 think that's one of the things that we have
20 been struggling to achieve as the affected
21 units of local government, is a meaningful
22 role in oversight.

1 I would also mention that the
2 Nuclear Waste Technical Review Board, from
3 whom you will hear later this afternoon, has
4 also served a very important function in
5 holding the Department of Energy's feet to the
6 fire when it came to some of the technical
7 issues. So, oversight is a critical
8 component.

9 MEMBER PETERSON: I think it is
10 interesting because, also, the comments about
11 Ward Sproat and the culture that he comes
12 from, which is one which has over the last
13 couple of decades moved towards embracing
14 regulatory oversight as adding value, might
15 explain some things relative to the Department
16 of Energy, where that perhaps is not the case.

17 MS. TREICHEL: If I can just add
18 to that, oversight is more than just the
19 people that you pay to do oversight, like the
20 affected units of government of the state, or
21 whoever. Oversight can be done by the public,
22 and it is.

1 And in the Yucca Mountain area,
2 you've got experienced, long-time, several-
3 generation families of well-drillers that were
4 just scratching their heads over the idea that
5 DOE was drilling here or was saying this about
6 the characteristics of a water table that they
7 dealt with all the time.

8 And they would go out there and
9 they had produced wells for dairies, for
10 individuals, for others. There was no way
11 into the system for those people.

12 And even for those of us that were
13 going to all of the meetings, like myself, you
14 would get into a discussion, and very quickly
15 DOE would revert back to the same old saw
16 about, well, it's the law; we were told to go
17 to Yucca Mountain and develop a repository.
18 So, that was the end of the conversation.

19 Or with the NRC, when you would
20 say, "This just isn't good enough. You're not
21 adhering to those sorts of -- you're not doing
22 this or you're not doing that," and then, out

1 in the hall you would get a discussion about,
2 "Well, so you want the lights to go out? What
3 do you want us to do, just get rid of nuclear
4 power?"

5 Well, that's not the discussion,
6 and that's not the level where we should be
7 discussing these things. So, there were
8 always these fallback positions that you could
9 just stop the discussion and end the meeting
10 and everybody go home.

11 CO-CHAIR HAGEL: Jonathan?

12 CO-CHAIR LASH: Before I ask my
13 question, I want to add my thanks to all of
14 the members of the panel. You came a long way
15 to talk to us, and this is incredibly useful.
16 None of us have had this hands-on experience.
17 So, we're absorbing this like sponges and
18 really appreciate the trouble you took to come
19 talk with us.

20 I have a question that I will
21 first direct to Judy because it actually
22 follows up on your last statement, but then

1 ask the others of you to comment on it, if you
2 wish.

3 All three of the local governments
4 have emphasized the importance of local
5 government in having input into the process,
6 which I would assume you would fully support,
7 and that there is a need for you to have the
8 resources to be able to participate
9 effectively. Participation isn't going to
10 mean much if you don't have the resources to
11 have expertise and data, and so forth. The
12 question is whether that should be applied
13 also to non-governmental organizations.

14 You started out, Judy, by saying
15 we didn't get any federal money; we didn't get
16 any State money. We are supported by
17 citizens. That gave you complete independence
18 to be a pain in the butt, if you wanted to be.
19 But it meant that you didn't have the kind of
20 resources that some others might have had.

21 There have been some programs in
22 the past that provided participation resources

1 to non-governmental organizations. I wondered
2 if you thought that would be an important part
3 of a future program.

4 Then, I would be interested in how
5 local government would feel about in some way
6 being circumvented by also having non-
7 governmental organizations supported.

8 MS. TREICHEL: Well, absolutely,
9 and I certainly appreciate the fact that my
10 expenses are being paid to come here. That is
11 almost unheard of, and thank you very much.

12 But, sure, people go in almost
13 angry when you get there, if you have had to
14 go someplace, travel, you know, take your
15 Frequent Flyers or somebody else's help to get
16 somewhere, stay on a floor someplace, and then
17 participate. It also reflects the level of
18 respect that is given to people.

19 Absolutely, I think the State and
20 the affected units of government, or however
21 the money came, it should have come that way,
22 and they did need to be able to hire

1 expertise.

2 But the public has experts as
3 well, as I was talking about, with the well-
4 drillers. There are also people who have
5 donated their time that have other scientific
6 expertise, and they just believe that it is
7 important to add that to the discussion. But
8 it didn't always get in there.

9 I think, unfortunately, the
10 willingness to help people with expenses to
11 participate means that you respect and you
12 want their participation.

13 DR. BAUGHMAN: If I might just
14 add, you know, I think that the cautionary
15 note would be in the case of local government,
16 and our County, like Nye County, has never
17 taken a formal position for or against Yucca
18 Mountain, neither has the City of Caliente
19 formally taken a position for or against.

20 Our position was always to
21 understand and seek to minimize the impacts
22 and understand and seek to maximize the

1 benefits. That was kind of our bottom line.
2 That was our considered fiduciary
3 responsibility.

4 So, we do not consider that, if
5 you look at the bibliography I gave you, the
6 85 different studies that have been done, all
7 of that was to help us understand, how does
8 this affect us and what do we do about it so
9 we don't get left holding the bag, if you
10 will?

11 I would not consider that in any
12 way to be advocacy science. It was a science
13 to understand or reports to help us
14 understand.

15 My cautionary note would be, if
16 you engage a party that has taken a position
17 in opposition or even for the project, and you
18 fund them, they will be undertaking advocacy
19 science to support their position. And is
20 that the way we spend money? I mean, is that
21 an effective use of resources? I don't know.
22 That's for you to decide.

1 But I'm pretty convinced that, if
2 they've taken a position for or against, it
3 will be advocacy science to support that
4 position.

5 MR. GERVERS: I guess I have to
6 disagree with that position rather firmly.
7 Clark County has taken a formal position in
8 opposition to the repository, and they did it
9 for a very good reason. And that is that they
10 saw it as a potential blight on their primary
11 source of economic well-being, the tourism
12 industry.

13 The impact assessment work that
14 has been done by Clark County I think is
15 recognized generally as having been mutual in
16 its approach and not supportive of an advocacy
17 position. I think that funding should be made
18 available to all of the government entities
19 that have an interest in this, regardless of
20 whether they have taken a formal position or
21 not on the facility.

22 As to the NGOs, I personally think

1 that the NGOs should have at least a modest
2 level of funding that would allow them to
3 attend and participate in all discussions. I
4 think that funding the NGOs to the extent of
5 having the ability to undertake detailed
6 impact assessment studies perhaps would be
7 something that should be left to the local
8 governments and to the State government or
9 tribal governments, or whatever it is.

10 So, I think that is the
11 distinction that I would make.

12 CO-CHAIR HAGEL: John?

13 MR. LACY: Yes, first, just one
14 quick thing on top of that is any NGOs need to
15 have at least some commitment to the process
16 and some nexus to the local government.
17 Bringing in outside groups in many cases who
18 are advocates, one way or the other, probably
19 would not bring a whole lot of benefit to the
20 process.

21 MEMBER ROWE: First, I also would
22 like to thank the panel for both the breadth

1 and the soberness of the observations they
2 have made. I find it very helpful.

3 But Director Treichel -- or
4 Triechel; I apologize for not hearing your
5 name right; I'm deaf -- raised a couple of
6 kind of square tests of an acceptable site.
7 One was that the waste be safer there than it
8 is in the dry cask storage, where it may sit
9 today.

10 And this gets to a debate I know
11 this Subcommittee will have as to whether we
12 are better off with a formula that says, over
13 X millennia we will not exceed a possible
14 public exposure of Y, or whether we're better
15 off with some more functional test of what is
16 adequate safety.

17 On the one hand, you use a lot of
18 calculations to try to figure out how to keep
19 the numbers down, but the longer you've got in
20 time, the less those calculations are
21 credible.

22 I'm curious if any member of the

1 panel could comment to me on what kind of
2 safety standard passes muster with real
3 Americans on the street.

4 MS. TREICHEL: Well, first, you've
5 got to have a conversation with real Americans
6 on the street or people that they trust to
7 represent them, that they feel that is being
8 carried on.

9 But I do have to say that, if
10 you're going to go to the expense, the time,
11 and everything that goes into a final
12 disposition of nuclear waste, it should
13 certainly be safer. There should be a reason
14 to do it, and that's ultimate safety.

15 And if you have a geologic or a
16 sub-seabed or some sort of decision that you
17 have made about the best way to go, part of
18 being the best way to go is that it has sort
19 of an eternal safety factor. It's going to do
20 the job.

21 And that is why the State is still
22 in a legal battle regarding the EPA standard,

1 which after 10,000 years gets lax or it allows
2 more exposures than it did at the beginning.
3 And we've always felt that was unfair. You
4 don't set up a trap for future generations.
5 If you're going to take an action, it's
6 protecting everybody all the way out.

7 CO-CHAIR HAGEL: Gentlemen, would
8 you like to respond? Mike?

9 DR. BAUGHMAN: Well, I guess we
10 have grappled with this a little bit in
11 Lincoln County. I think the issue for us is,
12 in terms of standard, it is that the residents
13 want to know that they are protected and they
14 are not incurring any level of risk any
15 greater than what they would incur otherwise.
16 And we are in an area which has incurred a lot
17 of risk. I mean we have got downwind, and we
18 have got shipments coming through our area
19 right now.

20 So, I think, in general, the
21 County felt that the standards that were
22 proposed by EPA were not unreasonable. They

1 certainly didn't result in us being exposed in
2 any way to radiation any more so than we would
3 be otherwise.

4 The rub that we had was DOE
5 seemingly in their analyses was unwilling to
6 consider a lot of the cumulative risk, the
7 cumulative aspects of radiological risk
8 associated from different sources, which is
9 kind of perhaps a little bit outside of the
10 bounds of the standard itself because it
11 applied specifically to the operation of the
12 repository and fell perhaps more into the NEPA
13 realm.

14 But I think that was kind of where
15 we ended up on it.

16 CO-CHAIR HAGEL: John? Or
17 Darrell?

18 MR. LACY: The education and
19 outreach is very important in this process,
20 though, since the average person on the street
21 has very poor understanding of radiological
22 risk, and the fear factor there is very high.

1 So, even though if you look at the Yucca
2 Mountain risk based on the calculations that
3 DOE has submitted it is very low, in the
4 neighborhood of a maximum of 2 to 3 millirem
5 per year maximum dose to an individual at the
6 fence line, which is less than one chest x-ray,
7 it still was an exposure that some people did
8 not understand and had an unfounded fear of.
9 So, I think that is going to be important
10 anywhere we go.

11 If you look at things around the
12 country, you find out that people become more
13 comfortable with it as they are exposed, but
14 understand it more. If you look around the
15 nuclear power plants and other nuclear
16 facilities in the country, the population is
17 much more comfortable with things nuclear than
18 the general population is elsewhere. So, it
19 is possibly something for us to learn from and
20 make sure that, as we mentioned before, the
21 soft issues are very important in this
22 process.

1 CO-CHAIR HAGEL: Thank you.

2 MR. GERVERS: I think in terms of
3 the public acceptance of a standard, that one
4 of the most important things is that you
5 settle on what the standard is and then don't
6 try to change it. That is one of the things
7 that we did.

8 We had a standard created by the
9 Environmental Protection Agency for all
10 repositories, and this was applied to the
11 Waste Isolation Pilot Project in New Mexico,
12 but when it came to Yucca Mountain, it was
13 clear that Yucca Mountain wasn't going to be
14 able to meet that standard. So, the standard
15 was then changed.

16 That's really bad for public
17 acceptance and for public perception. So, it
18 is not so much what the standard is; it's how
19 you present it and the consistency with which
20 you maintain it.

21 CO-CHAIR HAGEL: Thank you very,
22 very much for a much enlightened panel

1 discussion, your presentations. We are
2 grateful. We will have an opportunity, I
3 think, during the rest of the day to probably
4 engage you.

5 It's also timely that Senator
6 Domenici has parachuted in just at the moment
7 we are going to talk about New Mexico.

8 (Laughter.)

9 So, Senator Domenici, welcome.
10 Nice to have you, sir. Thank you very much.

11 MEMBER DOMENICI: Thank you very
12 much.

13 If you want to kind of know what
14 -- I never wore glasses and looked like this
15 when you saw me as a Senator. So, I want you
16 to know that I have had a cataract operation
17 and it's very successful, but it leaves you
18 that one eye is too powerful, and you're
19 waiting around to fix the other one. So,
20 these little glasses help some, but I really
21 can't see too well until I get the second one
22 removed. But if you haven't had cataracts,

1 you ought to get them.

2 (Laughter.)

3 Because when you remove them, you
4 can see like a newborn and you will say, "Why
5 didn't I do that sooner?" Well, there wasn't
6 anything to do.

7 CO-CHAIR HAGEL: Well, we're glad
8 you're with us. We're glad you can see
9 better. You've always had great vision and
10 you've always been a star and celebrity. So,
11 the sunglasses fit.

12 (Laughter.)

13 MEMBER DOMENICI: Thank you so
14 much.

15 CO-CHAIR HAGEL: All right, let's
16 go to New Mexico. Ron Curry is going to come
17 up, and I will introduce Ron. Actually,
18 Senator Domenici could introduce Ron Curry.
19 He may have some things to say, but I will --

20 MEMBER DOMENICI: No, go ahead and
21 do it. He's not one that I would relish
22 introducing.

1 (Laughter.)

2 CO-CHAIR HAGEL: Well, you're
3 going to have a hell of a fun morning here,
4 Ron.

5 As we noted, we're going to shift
6 from Yucca Mountain to the Waste Isolation
7 Pilot Plant, and we will hear from Ron Curry.
8 Ron is the Secretary of State of the New
9 Mexico Environment Department, a position he
10 has held since 2003.

11 Secretary Curry, thank you, sir,
12 for being here. Please proceed.

13 After Secretary Curry, we will
14 have your presentation and opportunity for
15 questions, and then we will have a panel,
16 which will flesh out some of the more specific
17 areas.

18 MEMBER DOMENICI: Mr. Chairman?

19 CO-CHAIR HAGEL: Yes?

20 MEMBER DOMENICI: Might I say I
21 have a statement. I would like to put it in
22 the record. I will allude to it before I

1 leave.

2 And secondly, it is my
3 understanding that this Subcommittee or the
4 Committee will meet in Carlsbad, the site of
5 WIPP, at sometime in the future, is that
6 correct?

7 MR. FRAZIER: Yes, we have been
8 discussing meeting in Carlsbad, but the dates
9 haven't been --

10 MEMBER DOMENICI: I understand. I
11 would assume that more local witnesses would
12 be called there, and that's the only reason I
13 make the point, because a couple stand out as
14 witnesses who are not being called that
15 certainly would have something to say that is
16 terribly relevant about the citizen
17 participation.

18 I thank you.

19 CO-CHAIR HAGEL: Thank you,
20 Senator. And obviously, your statement will
21 be included in the record, and we will look
22 forward to your questions and comments. Thank

1 you.

2 Mr. Curry, welcome.

3 SECRETARY CURRY: Thank you,
4 Senator.

5 I also would like to welcome
6 Senator Domenici. I'm always glad to see him.
7 He and I have had several very straightforward
8 discussions over the years, and I am always
9 interested in his advice or thoughts that he
10 has for me just about on any project.

11 So, thank you for inviting New
12 Mexico to be here today.

13 New Mexico has a very long history
14 ranging from the Manhattan Project to the
15 Trinity Test Site to the opening of the
16 nation's first permanent radioactive waste
17 repository. New Mexico has been involved in
18 the nuclear history.

19 And for me personally, my late
20 father-in-law was a worker at the Manhattan
21 Project. So, through those years and
22 discussions with him, it has given me an

1 opportunity to understand a lot about what
2 goes on within our nation's nuclear complex.

3 He also worked at Sandia National
4 Laboratories later on in his life, and I had
5 the opportunity over the years -- I carried a
6 DOE Q clearance in the nineties. It's
7 inactive now. But during that time, I worked
8 on a sitewide Environmental Impact Statement
9 at Los Alamos, which is important in New
10 Mexico because much of the transuranic waste
11 that leave Los Alamos ends up in the WIPP
12 repository.

13 But I believe that one of the
14 things that I bring to you today is that the
15 cornerstone of what makes things happens as
16 far as working with a great deal of trust with
17 a federal agency like DOE, the cornerstone is
18 that we have to have strong, independent state
19 regulatory authority.

20 And since WIPP is the nation's
21 first and only permitted deep geological
22 repository, we have seen over the years

1 firsthand what the federal government did
2 absolutely correct and what they've done
3 absolutely incorrect, and in some cases
4 continues to do incorrectly.

5 For New Mexico, it is important
6 and it's crucial that WIPP remains focused on
7 its mission; that is, the disposal of the
8 nation's defense-related transuranic waste and
9 not expand to disposal of other wastes for
10 which it was not intended.

11 DOE has a contract with the State
12 of New Mexico to do exactly that. And in New
13 Mexico, we expect that that contract be upheld
14 and adhered to.

15 There are a lot of scenarios under
16 which a disposal facility for high-level waste
17 would not be a necessity, but I will focus my
18 remarks today on what a development process
19 for such a facility should look like.

20 New Mexico's experience with the
21 development and operation of WIPP is
22 considerable. That's made more holistic, if

1 you will, by the fact that we have three DOE
2 facilities in New Mexico. We have facilities
3 that are producing, and then we have WIPP,
4 which is taking the waste, some of the waste
5 from some of those facilities.

6 There are a myriad of issues of
7 concern to the public and the State that go
8 beyond the technical merits of siting such a
9 facility. Not only must the public be assured
10 that the facility itself will not pose a
11 threat to people and natural resources, but
12 also social and economic issues,
13 transportation safety, road improvements,
14 waste characterization, and cooperation from
15 generating facilities must be addressed by a
16 broad coalition of elected officials,
17 scientists, community leaders, regulators, and
18 the public.

19 And I think one of the things that
20 I mentioned in there that you should take into
21 consideration, or at least be aware of as you
22 go through your process, is that even though

1 WIPP is obviously located in New Mexico and
2 receives waste from all of these other
3 facilities, how that waste is characterized
4 before it leaves a facility outside the State
5 of New Mexico and comes to New Mexico is very
6 important. And the State of New Mexico in its
7 regulatory capacity is very much involved in
8 how that waste is characterized before it
9 leaves another state and comes to New Mexico.
10 We have found from the regulatory process that
11 that at times can be very, very difficult to
12 manage.

13 A crucial component of WIPP's
14 success is a strong regulatory structure to
15 oversee permitting and its operations. This
16 framework includes several elements that are
17 critical to the long-term sustainability of a
18 project like a high-level waste disposal
19 facility.

20 Again, a strong, independent state
21 regulatory body instills public confidence
22 that the facility will operate and close in a

1 manner protective of this and future
2 generations regardless of whether or not the
3 facility is privately or publicly run.

4 It's even more important for a
5 high-level waste facility because the federal
6 government has lost much of its credibility
7 with respect to providing effective oversight
8 and enforcement of rules designated to protect
9 the public.

10 I will say now, and I will say
11 later on, that DOE, as an entity, has failed
12 its self-regulation. DOE, as an entity, has
13 really not been designed to regulate itself
14 and perform enforcement on itself. So, that,
15 again, brings in the necessity of a state
16 agency, like the New Mexico Environment
17 Department, performing strong regulatory
18 oversight, so that the operations at WIPP can
19 be held accountable.

20 You might want to consider
21 independent and outside regulatory oversight
22 as the key for enforcement to making sure that

1 the public's concern about any operations that
2 go on at a high-level waste facility are
3 answered.

4 You might consider having another
5 group look at forming a commission that would
6 cause the siting being done by something other
7 than DOE, because, as you have heard this
8 morning, and you will hear again from other
9 folks, DOE is not necessarily objective when
10 it comes to siting various operations for
11 disposal.

12 When we talk about state
13 regulation, again, it's the most important
14 thing as far as we are concerned when it comes
15 to generating public confidence in what is
16 going on at a high-level waste or a facility
17 like WIPP.

18 DOE, in 2003, when this
19 Administration came in in New Mexico, you
20 would find terms like partnership, project
21 management plans. You would find them on
22 placards. You would find them on posters

1 throughout the Environment Department.

2 Project management plans, as we
3 have seen them as a way of regulating what
4 goes on at a DOE facility, have failed because
5 it goes back to what I was saying before. It
6 is that a project management plan is nothing
7 other than a tool for self-regulation, and DOE
8 doesn't do self-regulation at all.

9 The other thing that I think is
10 important, and if you look at things in
11 today's world, one of the things that we have
12 endeavored to take out of the formula is the
13 word "partnership". Partnership is an
14 interesting word, but oftentimes partnerships
15 can be used to compromise a state's ability to
16 impose a regulatory authority or
17 accountability in the operations of a unit or
18 an operating unit, whether it's a DOE unit or
19 whether it's a dairy or whether it's a mom-
20 and-pop cleaners.

21 What you're looking for is a way
22 to work with a facility and hold them

1 accountable. When you offer someone a permit
2 from an environment department, you are giving
3 them, quite simply and literally, in that
4 permit you are giving them permission to
5 pollute. And if it's in a community, you are
6 telling them, up to a certain level, they can
7 pollute the groundwater, the air, or the land
8 in some way.

9 So, when you think of a permit
10 that's given to someone or an entity as
11 permission, and they violate that permission,
12 they have, in fact, violated a contract.

13 So, in New Mexico, we think it's
14 very important that, if you're going to have
15 a permit like we have for the operation of
16 WIPP, you can write into that permit, working
17 with the entity that is being permitted, you
18 can write into that permit very tight
19 restrictions on how they operate. And if they
20 participate, along with the public, in the
21 writing of that permit, you can solve many of
22 the problems that you will see going down the

1 road because that permit becomes their
2 guideline and it becomes their bible, if you
3 will, on how to operate their facility.

4 One of the things that I believe
5 also is important when you're talking about
6 this is that, while many of the members of the
7 public may never agree to support a nuclear
8 waste disposal, it's important that a
9 transparent process goes forward when you're
10 writing this permit. We are in the process of
11 looking at renewal for the WIPP permit in New
12 Mexico right now.

13 But I think it's continually
14 important that you stress the importance of
15 state regulation, transparency through that
16 regulation, public input, especially if that
17 public input is also non-technical public
18 input.

19 I will continue to urge this
20 Commission that they consider a strong voice
21 for states throughout the development of a
22 nuclear waste disposal system and development

1 process, and I wish you well in all of your
2 endeavors.

3 So, any questions, I would be glad
4 to try to answer them for you.

5 CO-CHAIR HAGEL: Mr. Curry, thank
6 you very much.

7 Questions?

8 MEMBER MacFARLANE: All right, I
9 will ask one.

10 CO-CHAIR HAGEL: Allison?

11 MEMBER MacFARLANE: Okay. In your
12 written statement, you said you can envision
13 many scenarios under which a disposal system
14 for high-level waste would not be a necessity.
15 What were you thinking there? What was the
16 thinking on that one? It sort of gets to
17 question two.

18 SECRETARY CURRY: Okay. The most
19 obvious one is in situ disposal from where it
20 was initially produced. We look at Los Alamos
21 as an example, and see the bad practices that
22 no one was aware of back in the day of Los

1 Alamos.

2 I suspect that if they knew back
3 in the forties and fifties, sixties, and
4 seventies that that type of waste would be
5 there forever and ever and ever, they would
6 have perhaps taken a different way of
7 disposing of it and storing it. They might
8 have produced it in a different way.

9 So, we can tell you stories about
10 things, you know, cars being pushed off of
11 canyons in Los Alamos. We can tell you about
12 things that they didn't know what they were
13 doing. They just put it into the ground, and
14 that was part of the time.

15 But I think if people look at
16 knowing what they are producing and how they
17 are producing it, knowing that it's going to
18 have to stay there after it's been produced,
19 the waste is going to have to stay there, they
20 will take a different approach.

21 CO-CHAIR HAGEL: Per?

22 MEMBER PETERSON: I have a

1 question that relates to regulation of, say,
2 disposal facilities. If ultimately the
3 regulatory authority is a federal authority,
4 like the Nuclear Regulatory Commission or the
5 EPA, then the state still needs to have some
6 type of oversight to assure that the federal
7 authority is performing, executing its
8 responsibilities effectively and correctly.

9 How best to implement that type of
10 oversight, where ultimately the regulator is,
11 say, a federal entity, but the state has a
12 legitimate interest to make sure that that
13 entity is performing its work properly? Does
14 that make sense?

15 SECRETARY CURRY: Sort of. Let me
16 give it a shot.

17 In WIPP's case, it is regulated by
18 several federal entities. It is also
19 regulated by the State.

20 The State's portion of that
21 regulation has the ability to essentially
22 override all the federal regulations. The

1 State's ability, if you will, in the worst-
2 case scenario to shut down WIPP or to stop
3 shipments from coming in exists within the
4 permit.

5 So, that takes me to what I was
6 saying. When you're writing the permit, and
7 the permit for WIPP is extensive, as you know,
8 and you will hear later on from the folks that
9 are here, when you write that permit, you try
10 to take in all the possible scenarios that
11 could ever occur at the facility. When you
12 are doing that and you have certain
13 modifications that you go through, it puts the
14 state in a very powerful position as far as
15 making sure that that entity operates
16 correctly.

17 I would say, and others may
18 disagree with me, but I would say that the
19 authority that exists within the State of New
20 Mexico for our ability to regulate WIPP is
21 very strong. I think that it is stronger than
22 EPA's because we have a broader range on which

1 the permit that we write has a greater impact
2 on the day-to-day operations of WIPP.

3 So, again, I will go back to the
4 permit and say that it's broad. We continue
5 to look at it. It's always a work-in-process.
6 It goes under renewal on a regular basis.
7 There are other permits around it.

8 For instance, when WIPP is being
9 mined, they have developed salt piles that now
10 sit on top of the ground, and we have had
11 situations where they have developed their own
12 groundwater under those salt piles and they
13 have their own groundwater contamination under
14 those salt piles, which is a whole different
15 part of the operation that no one ever
16 envisioned in the beginning, but that
17 groundwater contamination had the ability to
18 migrate up from those salt piles onto a
19 rancher's land that was adjacent to the WIPP
20 operation. So, it became a concern.

21 So, we look for, and I don't say
22 this in a tyrannical method or way, but we

1 look for ways to make sure that we can always
2 hold the entity accountable. And
3 accountability is a very popular word in
4 today's world, but we believe that
5 accountability that lies with the state is
6 ultimately best for the entity because it
7 instills that public confidence that the
8 entity is operating correctly.

9 CO-CHAIR HAGEL: Vicky?

10 MEMBER BAILEY: Where does that
11 regulatory responsibility lie in the State?
12 I guess, what body is it that you're talking
13 about a strong regulatory --

14 SECRETARY CURRY: In our State,
15 it's the Environment Department; we are
16 usually looking at RCRA as far as the
17 authority that we use.

18 MEMBER BAILEY: I'm sorry, RCRA?

19 SECRETARY CURRY: Resource
20 Recovery and --

21 MEMBER BAILEY: Okay. So, the
22 environmental authority, did they, then, hold

1 a lot of public conferences and hearings, and
2 what have you, before making this decision?
3 How did you get to the mindset that this was
4 acceptable and this was going to be a success?
5 What kind of economic promises, financial
6 incentives? What were some of the political
7 issues?

8 The way you posit it, it sounds
9 very pragmatic and you got there in a very
10 easy fashion, but what I hear like from a
11 state like Nevada and others, it's not quite
12 that easy. So, tell me how you got there.

13 SECRETARY CURRY: Well, it is a
14 long story.

15 MEMBER BAILEY: Make it short.

16 (Laughter.)

17 SECRETARY CURRY: It's a long
18 story, and Senator Domenici could add a lot to
19 you, Representative Heaton behind me, and Don
20 Hancock can all add a lot to it.

21 But the public process has been so
22 important in New Mexico, and that has been

1 emphasized by all the parties involved, that
2 the public process be a large one.

3 It took over 20 years to get where
4 we're at today. But when we're going through
5 a permit renewal like we're going through
6 right now, the Department, along with the
7 entity of WIPP, writes a draft permit. That
8 draft permit is then circulated to the public,
9 and the public has a number of days to comment
10 on it.

11 Eventually, what we do is, once
12 the comment has come back in, we have gone
13 into negotiations between all the parties
14 involved to see if we can resolve many of the
15 issues before it goes into the public hearing,
16 where there's a hearing officer and a public
17 hearing is taken over a period of days,
18 depending on how many people want to comment.

19 In that public hearing, everything
20 from economics to transportation to
21 environmental concerns, health concerns, are
22 taken into consideration.

1 MEMBER BAILEY: So, I guess to
2 shorten it, what got you over the challenge?
3 What got you there? Was it a large economic,
4 you know, jobs, money, land? What got you
5 there?

6 SECRETARY CURRY: Well, the
7 Congress passed, back in the nineties, they
8 passed the Land Withdrawal Act, and they
9 amended it again in the mid to late nineties.
10 That was a key element.

11 During the process of all the
12 negotiations, there has been a lot of money
13 that has come from the federal government for
14 transportation, for instance. You will find
15 a route in New Mexico, anywhere where the WIPP
16 trucks travel, there has been money that has
17 been provided by the federal government to
18 improve those routes, so that they are safe.
19 You will find a bypass, if you will, from Los
20 Alamos that bypasses around the west side of
21 Santa Fe and then on down to Carlsbad.

22 You will find the roads from Los

1 Alamos to Carlsbad that the WIPP trucks have
2 to travel, you will find those roads are
3 usually more maintained and in better shape
4 because of the federal dollars that come in
5 than the other roads in New Mexico.

6 MEMBER BAILEY: Okay. So, the
7 participation of DOE and the federal kind of
8 made the difference here, because it is
9 basically a DOE site?

10 SECRETARY CURRY: The DOE has been
11 asked, there's been negotiations all the way
12 from Carlsbad to Santa Fe to find money
13 whenever possible. That money is mostly found
14 here in Washington.

15 But there are various community
16 groups along the route that WIPP travels where
17 you want to have health and safety training,
18 and that money has been provided for. You
19 want to make sure that at all times the public
20 is included in every sort of negotiation.

21 But the money comes, but the money
22 doesn't always come just because we ask for

1 it. There has to be concessions made, and
2 there has to be the concern expressed that is
3 always in the background of most New Mexicans,
4 is that New Mexico is a host state to three
5 DOE facilities. Those three facilities have
6 provided many jobs in New Mexico and continue
7 to do so. But it's also important to remember
8 that the federal government treats the State
9 in a way that is respecting of a host.

10 MEMBER BAILEY: Okay. Thank you.

11 CO-CHAIR HAGEL: Senator Domenici?

12 MEMBER DOMENICI: I know we are
13 going to have other witnesses, and I'm, as a
14 result, going to be very brief with this
15 witness.

16 But I would want to say, when the
17 witness speaks about "we" and uses we should
18 do this and we should do that, I want
19 everybody to know that he was not elected to
20 any office ever by anyone in New Mexico. He
21 was always in some agency having some
22 supervisory capacity and acted in that

1 capacity.

2 Secondly, I want you to think a
3 minute. When the witness testifies that the
4 people believe the State and the State has to
5 have power, the truth of the matter is the
6 United States Government has all of the power.
7 And what you are going to do is you are going
8 to be writing what kind of power you are going
9 to give the host state, and that's why it is
10 important that we find out what works.

11 Even though we are not going to
12 pick sites and say this is the site, you are
13 going to discuss with your excellent staff and
14 full Commission what should the state and the
15 local government have by way of authority over
16 this kind of project. It's not inherent that
17 they have the power that the witness talks
18 about.

19 It's what should we, as a
20 government, to see this project through and
21 see it done right, and see that the citizens
22 get whatever they are supposed to, what are we

1 going to say about that, not what they say
2 about it. What they tell us ought to be there
3 and then we have to decide, in the interest of
4 our nation, what is reasonable to give to the
5 locality.

6 Now, ultimately, in New Mexico I
7 must tell you that this was a great success
8 because, if you ask who was for it, well, you
9 have two Senators, Domenici and Bingaman.
10 Senator Domenici was a leader in it, and
11 Senator Bingaman was Attorney General who
12 negotiated an agreement and, ultimately,
13 supported the project.

14 We had a Congressman, and he
15 supported the project. He ended up being
16 Governor later, but he supported the project,
17 although, it's fair to say, sometimes you
18 didn't know whether that Congressman was for
19 it or against it, and he would not be insulted
20 if he were here and heard me say that. I was
21 with him when we dragged him, pushing and
22 shoving along, and he agreed.

1 But what I'm telling you is that,
2 before it becomes a reality, the most
3 important thing was that the locality, that
4 Carlsbad, the City, the County, and
5 ultimately, the State, and most of the
6 congressional delegation, supported what we
7 were trying to do.

8 Now how can we write that into the
9 law? I guess we end up saying that we found
10 one project that worked, and in this case most
11 of the elected officials supported the
12 project. And then inquiry, how did they get
13 involved, those local people? That's
14 something we've got to understand, and we've
15 got to probably pay some money for experts.
16 How did they end up, the local people, how did
17 they end up getting the information and
18 deciding what they are going to do?

19 There's no question that the
20 wonderful lady -- I didn't know it, but she
21 knew me way back then because she worked for
22 one of our favorite Senators, she does now --

1 she was asking what pushed it. Well,
2 ultimately, a lot of local people understood
3 that this could be done safely -- that's the
4 first thing -- in spite of the negative people
5 who just yelled and screamed and talked about
6 things that didn't matter, but you listen to
7 them.

8 But, essentially, huge numbers of
9 people got the message that it was safe. Then
10 they wanted to know what the government was
11 going to do for them, and that was good jobs,
12 and there's about a thousand for a small town,
13 almost one-third the workforce, and it changed
14 the entire workplace of that County in terms
15 of upgrading the payment to those workers.

16 Then, in addition, the federal
17 government puts \$50 million a year into a
18 highway program. That was what they agreed
19 to. And in turn, New Mexico bonded against
20 that and built some highways that there will
21 be good stories to tell you about the
22 difference between reality and what citizens

1 thought early on.

2 I can tell you that, in getting
3 the roadways, just a closing funny story. The
4 State of New Mexico has a Supreme Court
5 decision that actually says, when you're
6 condemning the property for a road that WIPP
7 people are going to ride on, you have to
8 instruct the jury that they might consider the
9 fact that the property could be diminished in
10 value because a WIPP truck might travel that
11 road.

12 Well, you can't go any higher than
13 the State Court, but, obviously, in one of the
14 most foolish decisions ever, they said that
15 that's a good instruction to the jury. Why
16 was it foolish? Because when they finished
17 and built the road, instead of harming the
18 property, the property went up 500 times, just
19 because you put a beautiful road through and
20 that access; now it's a subdivision. Nobody
21 lost any money.

22 The road, the WIPP road travels,

1 Mr. Chairman, there are no accidents in the
2 total history of the project, no serious
3 accidents for 10 years.

4 So, somebody has to be the
5 gatekeeper for the reality versus the
6 unrealistic complaints of people just because
7 it is nuclear. In writing the rules, you are
8 going to have to understand that people are
9 opposed because it's nuclear or they're
10 opposed because they have facts that aren't
11 true.

12 And ultimately, this is a 10-year
13 success story. They have just now published
14 the 10-year history, and the road vehicles are
15 successful. The mining is successful. You
16 all will see it. It's an incredible
17 repository, the only one in the world, a
18 permanent, underground repository in salt that
19 has not moved in 40 million years.

20 I hate to keep him standing up
21 there for my tirade, but he deserves it for
22 all the grief he caused me and other people.

1 (Laughter.)

2 So, you could have him stand on
3 his head, as far as I'm concerned.

4 (Laughter.)

5 But I thank you very much.

6 CO-CHAIR HAGEL: Senator Domenici,
7 thank you.

8 As you know, we have more New
9 Mexico perspectives on the way after Secretary
10 Curry.

11 We have about two and a half
12 minutes left on your time. Would you want to
13 respond to anything here or any additional
14 questions? Secretary Curry, you have two and
15 a half minutes, and then we will get to other
16 New Mexico --

17 SECRETARY CURRY: I would just add
18 to what Senator Domenici just said that the
19 strong State regulatory oversight has provided
20 a lot of confidence in the public that has
21 allowed this project to go forward. And I
22 will contend that, as long as there is that

1 strong State regulatory oversight that people
2 can see, that they can reach out and touch and
3 participate in, that that's more likely to
4 make WIPP a success, or whatever facility
5 we're talking about a success, in the long
6 run.

7 CO-CHAIR HAGEL: Jonathan?

8 CO-CHAIR LASH: In response to
9 Vicky's question, you said that the permit was
10 issued largely under RCRA authority. Does the
11 State have any specific State statutes that
12 were developed for this or is it RCRA, Clean
13 Air Act, Clean Water Act, and so forth,
14 delegated?

15 SECRETARY CURRY: We have a State
16 Hazardous Waste Act and we also have a State
17 Air Quality Act and a State Groundwater, and
18 all those can come into play as well.

19 CO-CHAIR LASH: Thank you.

20 MEMBER PETERSON: Could I ask just
21 one quick follow-up question?

22 CO-CHAIR HAGEL: Sure.

1 MEMBER PETERSON: The regulation
2 involves things that relate to the very long-
3 term performance over thousands of years and
4 to operational safety as well and
5 transportation. Does the State's interest
6 align more with the operational aspects or
7 with the long-term as well? And how would one
8 divide those regulatory responsibilities for
9 the federal government versus those that the
10 State would have the oversight of?

11 SECRETARY CURRY: I would say that
12 the State has primary concern over the
13 operational aspects of it. Certainly, when
14 you look at the long-term, you know, thousands
15 of years out, we are in part of that mix well.
16 EPA is as well.

17 But if you look at the operational
18 aspects of our regulatory authority, a couple
19 of years ago, it seemed for a period of months
20 that, if WIPP was going to have a problem on
21 a regulatory area, it would happen on a
22 Friday. Sometimes that would be something

1 like the elevator shaft broke, which it did,
2 and when the elevator shaft broke, that would
3 take the TRU waste down. Then you had trucks
4 backing up in the parking lot, and they had to
5 keep their engines running. And all of those
6 things fell under the authority of the State
7 to deal with.

8 Then you had other trucks that
9 were in the pipe, so to speak, that were
10 leaving places like Idaho that had to be
11 staged so that they didn't end up sitting in
12 the parking lot with their engines running
13 before the elevator could get fixed.

14 So, there are methods within the
15 permit on how to deal with all of those
16 things, but there are also triggers within the
17 permit that could cause the operation of WIPP
18 to come to a stop if some of those triggers
19 aren't adhered to.

20 CO-CHAIR HAGEL: Secretary Curry,
21 thank you.

22 SECRETARY CURRY: Thank you.

1 CO-CHAIR HAGEL: We appreciate it
2 very much.

3 If the panel would come forward,
4 we will put the appropriate nameplates up
5 there, so that we don't mistake Don for Judy
6 and Lokesh for Mike.

7 As the new panel is taking their
8 positions, let me introduce the panel. This
9 panel will provide a range of perspectives on
10 the Waste Isolation Pilot Plant Project.

11 With us, we have Representative
12 John Heaton, who has represented New Mexico's
13 55th District since 1997; Dr. Lokesh
14 Chaturvedi, the former Deputy Director of the
15 Environmental Evaluation Group, which provided
16 independent technical oversight of the WIPP
17 project; Don Hancock, nuclear analyst at the
18 Southwest Research and Information Center in
19 Albuquerque, and Dr. Peter Swift of Sandia
20 National Laboratories.

21 Gentlemen, thank you. We
22 appreciate you being here.

1 Representative Heaton, we will
2 begin with you.

3 REPRESENTATIVE HEATON: Thank you
4 very much.

5 As he said, I have been a State
6 Representative since 1997 and represent
7 District 55, which has WIPP in my District.

8 I would like to thank you for
9 inviting me to make a comment, Mr. Kotek as
10 well.

11 You know, if the economy wasn't in
12 such horrible shape that it's in today, this
13 conversation would be dominating every one
14 that goes on across the country. The issue of
15 energy, the issue of energy independence, how
16 we electrify the transportation system would
17 be the No. 1 discussion across the country.

18 And nuclear power is the
19 cornerstone to accomplishing it. There is no
20 baseload energy source that is greenhouse-gas-
21 free, distributive in capability, and it is
22 the lowest-cost option today.

1 Nuclear power demand will grow,
2 and therefore, a deep geologic repository is
3 an absolute must. I can't impress upon you
4 what I think the urgency of getting it in
5 place really is today.

6 I thank you for taking on this
7 mission of addressing the back end of the fuel
8 cycle.

9 Next slide.

10 Salt was in 1957 the concluded
11 repository medium by the National Academy.
12 Geologically, the salt bed where WIPP is has
13 been there for 250 million years. Salt is
14 extremely soluble. If there were any water,
15 it would have dissolved out millions of years
16 ago.

17 Under heavy pressure, salt takes
18 on the characteristics of plastic. And if
19 there is a seismic or tectonic event that
20 might occur, salt will actually heal itself.
21 It will close upon itself. And it has great
22 or good geothermal distribution capabilities,

1 and the walls, ceilings, floor at WIPP are
2 moving almost 2 inches a year in every
3 direction to ultimately encapsulate the waste
4 forever.

5 Next slide.

6 When Lyons, Kansas, rejected the
7 idea of becoming the repository, one of our
8 local Senators, Joe Gant, Jr., he saw the
9 advertisement and he got the community
10 together, the community leaders, the Chamber
11 of Commerce. Those folks all came together,
12 said this could be a real opportunity for
13 Carlsbad; let's begin to look at it.

14 We had been mining potash in that
15 salt since 1930. So, we had a good sense of
16 what salt was about and how it would behave
17 and all the characteristics of salt.

18 So, we began hearings in the mid-
19 seventies about the 16 square miles that would
20 be withdrawn and what the mineral cost would
21 be or what the mineral values were. And the
22 community kept saying to itself let's take a

1 look; let's not foreclose on this idea; let's
2 let the science dictate where we go, and let's
3 not make up our minds early. And that is how
4 Carlsbad and its population began to come
5 together. Let's look at the science. Let's
6 follow the science.

7 So, as far as New Mexico goes, in
8 the mid-seventies there was a piece of
9 legislation introduced to prohibit waste of
10 this type coming into New Mexico, which was
11 defeated. And since then, there's been no
12 anti-WIPP legislation that has ever passed in
13 the New Mexico Legislature.

14 The Environmental Evaluation Group
15 was created, which was an independent, paid
16 critic of WIPP that worked under the
17 University system. So, it had all the tenure
18 capability of saying whatever it wanted to
19 say.

20 A consultation and cooperation
21 agreement was put together between DOE and the
22 State, and it was signed and it was basically

1 about communication, and it was about health
2 and safety and welfare issues for the public.

3 And the Legislature formed the
4 Radioactive and Hazardous Materials Committee
5 back in the early eighties, which was the
6 legislative oversight committee. And there
7 was an agreement made with DOE that they would
8 put \$300 million into roads in the State of
9 New Mexico over a 15-year period when the
10 facility was licensed.

11 Next slide.

12 As far as DOE -- the next one;
13 yes, I'm sorry, I'm behind here -- as far as
14 federal legislation, in 1980 the authorization
15 and appropriation was passed to begin to put
16 the shaft in place to really begin to look at
17 the science of the salt, and the shaft was put
18 in place and experimental rooms were designed.
19 Sandia National Labs was leading a lot of
20 those efforts at that time.

21 The next major piece of
22 legislation was the Land Withdrawal Act, as

1 you have heard, which withdrew 16 square miles
2 of land. It limited disposal to defense-only
3 transuranic waste. It prohibited disposal of
4 high-level waste, and it authorized a volume
5 of approximately 176,000 cubic meters. It
6 made EPA the regulatory for the radioactive
7 materials, and it made the State the regulator
8 for the RCRA materials in the laboratory.

9 Next slide.

10 And as far as the community was
11 concerned and the State, it was all about
12 safety. Safety was the No. 1 issue that we
13 discussed almost every day, every week. It
14 was very important. We had some 20 agencies,
15 more than 20 at one point, that were oversight
16 agencies for WIPP, and WIPP was based on the
17 very best available science. The community
18 constantly had meetings with DOE, educational
19 meetings, the State as well, and those made a
20 huge difference in terms of acceptance.

21 Los Alamos National Lab also
22 played a major role in terms of its technical

1 cooperation with the whole project.

2 Just the next slide, just to talk
3 about some successes of WIPP.

4 The community takes an enormous
5 amount of pride in what's happened at WIPP.
6 We have had 11 years now of safe operations,
7 more than 8600 shipments, more than 68,000
8 cubic meters of waste disposed of, more than
9 133,000 containers in the repository, and more
10 than 10 million loaded miles traveled with no
11 significant incident.

12 We think -- next slide -- we think
13 that salt can do much more. Early experiments
14 in WIPP were related -- WIPP was originally
15 thought to be a high-level repository, a high-
16 level waste repository. And in fact, the
17 receiving area for WIPP, the waste-handling
18 facility, actually has a hot cell that was
19 built into it in anticipation of managing
20 high-level waste.

21 Sandia National Labs and others
22 now are doing models for heat distribution,

1 and how that heat distribution would occur.

2 We think with science and safety as the bottom
3 line that we think it is a place that ought to
4 be looked at for other waste forms. There are
5 many out there.

6 We think -- next slide -- the
7 steps to success that I would outline for you
8 is, first, it's your obligation at this point,
9 as I understand it, to establish a waste
10 medium and define that, and of course, one
11 that's geologically-acceptable; find a willing
12 community, assure the state is in agreement.
13 And I would suggest that that agreement that
14 the state has is an irrevocable agreement and
15 that there is a commitment to incentives that
16 need to be in place to help the state and the
17 community, and that there be a long-term
18 agreement signed by the state based on science
19 and health and safety. And I think you need
20 a third-party arbitrator like EPA or NRC that
21 would make a decision about whether or not the
22 state could actually back out.

1 But you can't, none of us can
2 afford another \$12 billion, \$13 billion to
3 fail again. We just cannot keep doing that.
4 So, you have to have an agreement that makes
5 some sense.

6 We need to start, a very rigorous
7 education program needs to be initiated with
8 the state and the community. The
9 transportation system needs to be designed
10 with a site in mind, so they know how it's
11 going to affect them.

12 The Civilian Radioactive Waste
13 Fund absolutely has to be moved out of this
14 idea that Congress has power over it. It is
15 destroying our ability to go forward, and it
16 should be put into a private/public
17 partnership some way or another, so that \$750
18 million a year goes into a trust fund that can
19 be managed appropriately. And the host
20 community needs to have an opportunity for
21 taking on other interim storage, other kinds
22 of storage that might go on.

1 So, the next three slides deal
2 with interim storage, and then this is
3 discussion of defense high-level waste, is the
4 next slide, which is much different than the
5 commercial high-level waste in terms of
6 radioactivity and, also, in terms of its heat
7 generation.

8 Then the next slide just simply
9 talks about commercial fuel and what would
10 need to be done.

11 And I would just like to say that,
12 in conclusion, it was Carlsbad and its leaders
13 that fought the battle for 30 years. Only one
14 community would look at WIPP, and that was
15 Carlsbad. When LES wanted to put in their
16 enrichment plant, there were only two
17 communities that looked at it, and that was
18 Hobbs and Carlsbad. It was thrown out of
19 Tennessee and thrown out of Louisiana.

20 When GNEP was being proposed,
21 there were 30 communities that were wanting to
22 look at GNEP. When AREVA just two years ago

1 wanted to site another enrichment plant, there
2 were over 200 communities that were interested
3 in looking at that.

4 And I believe it's time for
5 Carlsbad and other states, New Mexico and
6 other states, to begin to talk about new
7 partnerships and get this done. It needs to
8 be done. WIPP has been a great success for
9 Carlsbad and for New Mexico.

10 Thank you very much.

11 CO-CHAIR HAGEL: Representative
12 Heaton, thank you.

13 Dr. Chaturvedi, thank you for your
14 contributions.

15 MEMBER DOMENICI: Mr. Chairman?

16 CO-CHAIR HAGEL: Senator Domenici.

17 MEMBER DOMENICI: Chairman, would
18 you permit? I was just thinking of my remarks
19 regarding public officials, and I failed to
20 mention one, Joe Skeen, U.S. Representative,
21 who was a staunch supporter, and I mentioned
22 other people, and he should be in that record

1 as one who worked very hard.

2 CO-CHAIR HAGEL: The record will
3 so reflect. Thank you, Senator.

4 MEMBER DOMENICI: And I would like
5 to say to all of you, members of the
6 Commission, the witness that just spoke is
7 atypical in that he is a private citizen,
8 pharmacist, State legislator, who decided
9 along with that then-mayor that they would get
10 knowledgeable and go out and support and talk
11 about this and get the questions answered.
12 He's a perfect example. If you could mimic
13 that in every area and get a citizen or two
14 that would spend the amount of time he spent
15 and become expert, yet he is a layman, he is
16 a businessman in town, it goes a long way.

17 This record should reflect that,
18 after years of failure, we have a success
19 because of a few people like that. There's no
20 question about it.

21 And I thank you, Mr. Chairman.

22 CO-CHAIR HAGEL: Thank you.

1 DR. CHATURVEDI: Thank you, Mr.
2 Chairman, members of the Commission, ladies
3 and gentlemen.

4 I guess I'm here because of my
5 involvement with the Environmental Evaluation
6 Group. This was a group that Representative
7 Heaton mentioned that was set up in the State
8 of New Mexico as part of a university system,
9 New Mexico Tech, outside of the State
10 personnel system, on which I worked for 21
11 years, even though for the last 10 years I'm
12 a consultant to the Technical Support
13 Contractor for the WIPP project.

14 I've also worked on a review group
15 to review the performance assessment of the
16 Yucca Mountain work. Then, I have also
17 reviewed, as a part of a professional group of
18 reviewers, working for Sandia National
19 Laboratories, to review the line-by-line
20 license application that was submitted to NRC.

21 It really came as quite a shock to
22 me that the Yucca Mountain project was

1 suddenly called off or canceled because those
2 of us who looked at the application thought
3 that, in spite of all the mistakes which were
4 mentioned by other panel members in the
5 implementation of the Nuclear Waste Policy
6 Act, the license application reasonably showed
7 that this would be a good place. I think
8 there was a good chance that NRC would have
9 approved it.

10 Nevertheless, with respect to the
11 WIPP project, I'm not just tooting my horn, I
12 mean a 10-year-old horn. But about the group
13 called EEG, Environmental Evaluation Group,
14 but the fact of the matter is, and this has
15 been said and written by several people, that
16 WIPP owes its success to this unique group that
17 was set up to perform technical evaluation,
18 which acquired its credibility and acceptance
19 by various constituents in the State, and in
20 fact, quite fearlessly stated technically what
21 needed to be said without respect to the
22 politics of the situation at the particular

1 time.

2 This group was opposed to, and I
3 was personally opposed to, the idea of
4 bringing waste to WIPP for experiments, the
5 five-year plan, the R&D project, the so-called
6 pilot plan. It never was meant to be a pilot
7 plan. It was always meant to be a repository.

8 That battle continued from about
9 1988 to 1992. It was only after Secretary
10 Hazel O'Leary and Assistant Secretary Tom
11 Grumbly changed the course of DOE, the idea of
12 putting some waste underground to show that
13 this would be okay for 10,000 years, changed
14 the course and decided to show compliance with
15 the EPA standards by doing performance
16 assessment, by using the data and doing the
17 risk analysis. And that process started in
18 1993. Only then an application was completed
19 in 1996, submitted to EPA, which is the
20 regulator, and EPA approved it in 1998. And
21 I believe WIPP is a success story because of
22 that decision to do things right.

1 I would simply like to say,
2 mention at least three technical factors which
3 need to be very seriously considered, if the
4 WIPP area was ever to be considered for a
5 high-level defense or spent fuel repository.

6 The first factor is that WIPP is
7 in active oil field. There are oil and gas
8 wells all around the 4-mile-by-4-mile WIPP
9 area. I have no doubt in my mind that if WIPP
10 did not exist, if the land had not been
11 withdrawn, that 4-mile-by-4-mile area would
12 also have been completely drilled for oil and
13 gas exploration.

14 When WIPP was located, Sandia
15 National Lab looked for real estate where no
16 oil and gas wells had been drilled. I don't
17 know if it would be possible to find areas in
18 the State in the vicinity of WIPP, now that
19 the whole area is an active oil field. That's
20 No. 1.

21 The second issue, a technical
22 issue that needs to be looked at, is the

1 effect of heat on salt and on the container.
2 The container at Yucca Mountain was designed
3 to last tens of thousands of years. The extra
4 gradient that heat produces to attract water
5 from the soil towards the container would make
6 that whole system as a highly corrosive
7 environment. So, if you want to continue
8 riding on the multi-barrier concept and have
9 a long-stability container, then that is a
10 situation that needs to be considered.

11 And third is the retrievability.
12 The retrieval idea was more feasible at the
13 Yucca Mountain site, and it will be much less
14 feasible in the salt repository.

15 That's all I need to say. Thank
16 you very much.

17 CO-CHAIR HAGEL: Doctor, thank
18 you.

19 Mr. Hancock?

20 MR. HANCOCK: Good morning, Co-
21 Chairmen Hagel and Lash, and members of the
22 Subcommittee. Thank you for the opportunity

1 to appear before you.

2 I have worked for a non-
3 governmental organization for the last 35
4 years. So, for 35 years, I have been dealing
5 with policy, legal, regulatory, technical, and
6 public education issues related to WIPP, as
7 well as some other nuclear waste sites.

8 So, on the one hand, one can say
9 that's a pretty long timeframe, but I actually
10 look at WIPP as a continuing experience. I
11 want to focus today on how some of that
12 continuing experience both has some lessons
13 learned in terms of your work for high-level
14 waste and commercial irradiated fuel, but also
15 how what happens with WIPP over, say, the next
16 couple of decades is also going to be very
17 important to what goes on.

18 So, I did a short, one-page piece
19 that had seven points, and I will try to focus
20 on those seven points. I did submit a much
21 longer piece that has more detail.

22 The first point that picks up on

1 some things that have already been said is
2 that WIPP is not suitable site for high-level
3 waste or irradiated fuel. It wasn't designed
4 for such waste. It wasn't characterized for
5 such waste. It's not technically suitable for
6 such waste.

7 WIPP's role, as has already been
8 mentioned, WIPP's role related to high-level
9 waste and commercial fuel was extensively
10 discussed in the seventies and eighties, and
11 there was general, as Representative Heaton
12 indicated, general, but not universal
13 agreement that high-level waste, commercial
14 spent fuel should never come to WIPP.

15 So, that is part of the law.
16 That's part of contracts. That's part of the
17 EPA certification for WIPP. That's part of
18 the State permit that Secretary Curry talked
19 about.

20 So, if WIPP's mission changes,
21 that's violating all of those laws and
22 agreements over the last 20-plus years. That

1 would result in major upset in New Mexico.

2 There would be a huge amount of opposition to
3 that, and I think, moreover, in terms of your
4 work at looking at other sites, it sends a
5 message to everybody else that laws and
6 contracts related to nuclear waste are not to
7 be believed.

8 If New Mexico, with its long
9 history of promises of what WIPP is for, is
10 going to be changed, why should anybody else
11 ever think that whatever laws and requirements
12 and contracts any other state or community has
13 will be adhered to?

14 The second point, the next 20
15 years will do a lot to demonstrate the
16 credibility, or lack thereof, of the federal
17 government and its contractors related to
18 nuclear waste disposal and transportation of
19 defense transuranic waste, a very small amount
20 of waste.

21 I guess I need to say, if all of
22 the waste that is coming to WIPP comes to WIPP

1 and is disposed of at WIPP, I want people to
2 understand it is less than one-tenth of 1
3 percent of the radioactivity in the existing
4 waste in this country. So, from a
5 radioactivity standpoint, we're talking about
6 an extremely small amount.

7 But there are four principles that
8 are very important. WIPP has a principle of
9 starting clean and staying clean. Waste comes
10 to the site. The containers aren't opened.
11 They're checked to make sure they're okay.
12 They are put underground. Start clean, stay
13 clean. No contamination at the facility, no
14 releases from the facility.

15 If that can be shown to work at
16 WIPP, that's very important. That shows the
17 federal government and the contractors safely
18 operate a transuranic disposal facility.

19 The waste has to get there. The
20 waste coming to WIPP comes through 20 states.
21 Is it going to continue to come through
22 without accidents, without releases for the

1 next 20 years? That would, again, be a very
2 important demonstration that the federal
3 government and its contractors, indeed, can
4 transport transuranic waste, thousands of
5 shipments of transuranic waste to a disposal
6 site.

7 Thirdly, WIPP is part of the
8 commitment to clean up Department of Energy
9 nuclear waste facilities around the country.
10 So, there's commitments that have been made to
11 New Mexico. There have also been commitments
12 made to other states related to their waste.
13 So, are those commitments that the federal
14 government makes reliable or not?

15 And fourthly, can the WIPP site be
16 safely closed, decontaminated, and
17 decommissioned? It has a mission. It has a
18 purpose. If it fulfills the purpose, again,
19 those are all demonstrations the federal
20 government and its contractors can do what
21 they say they are going to do, and do it well.
22 Conversely, of course, if any of those things

1 don't work out over the next 20 years, that
2 will send a different message.

3 Third, WIPP has very specific
4 limits on the amount of waste, transuranic
5 waste, that can come to WIPP, and a limited
6 amount of time that it can operate. Six point
7 two million cubic feet of transuranic waste is
8 in the law and in the EPA certification, in
9 the State's permits.

10 Those limits presume -- and this
11 is important -- that either the United States
12 will stop generating additional transuranic
13 waste beyond those amounts or timeframes or
14 that additional disposal sites for such waste
15 will be found or that some transuranic waste
16 will remain in other locations.

17 A technically-, politically-, and
18 socially-acceptable disposal program must be
19 based on some of those principles, too. How
20 do you construct, what scenarios do you have
21 for disposal, if you don't know how much waste
22 for what period of time you're going to have?

1 Fourthly, the WIPP site was
2 selected in the 1970s, when there were no
3 health and safety standards for repositories.
4 It was selected because of support from some
5 local officials that you have heard about and
6 pressure to have a disposal site for
7 transuranic waste because at the time there
8 was concern that the Rocky Flats plant in
9 Colorado, the nuclear weapons production
10 facility, would have a problem if it couldn't
11 get rid of its waste. So, there was a public
12 policy reason to hurry up and get a
13 transuranic waste disposal site, and there was
14 a community that was supportive.

15 A technically-, politically-, and
16 socially-acceptable disposal program must be
17 based on health and safety standards for
18 present and future generations that are
19 developed through a robust public process in
20 advance and approved before any further sites
21 are selected.

22 Fifth, Congress authorized WIPP in

1 1979 without providing for a state veto that
2 had been promised by the Department of Energy
3 and without providing for independent
4 regulation. That lack of state veto and NRC
5 licensing is currently, and should always be,
6 unique to WIPP.

7 A technically-, politically-,
8 socially-acceptable disposal program must
9 include transparency, robust public
10 involvement, positive acceptance from state
11 and tribal governments, and independent
12 oversight and regulation.

13 Sixth, in January of 1981, DOE
14 announced that it would construct and operate
15 WIPP. That decision was supported by numerous
16 local Carlsbad officials. It was opposed by
17 many State officials and the large majority of
18 New Mexicans. As a result, rather than
19 opening in 1987, when it was supposed to open,
20 WIPP didn't open until January 26th, 1999.

21 A technically-, politically-, and
22 socially-acceptable disposal program must have

1 continuing involvement of people. In answer
2 to the question earlier, I would certainly --
3 my organization is a non-governmental
4 organization. It hasn't gotten any federal
5 dollars for the work it has done. I think
6 it's essential that, in addition to funding
7 state and local governments, the worst critics
8 should also be offered money. Some non-
9 governmental organizations are going to say no
10 way; we don't want to be tainted by federal
11 dollars, but it needs to be there if you are
12 going to have a federal program.

13 Seventh, back to commercial spent
14 fuel, it is and will remain at or near current
15 reactor locations. I think that's
16 indisputable.

17 My organizations and a lot of
18 other organizations have submitted on several
19 occasions to this Commission the principles
20 for safeguarding nuclear waste at reactors.
21 Safe storage of irradiated fuel at reactor
22 sites is essential. If waste isn't adequately

1 safeguarded at reactor sites, why is the
2 public going to believe it will be adequately
3 safeguarded for thousands of generations at
4 any disposal site?

5 Thank you.

6 CO-CHAIR HAGEL: Mr. Hancock,
7 thank you.

8 Dr. Swift?

9 DR. SWIFT: Thank you. Thank you
10 for the opportunity to speak.

11 I'll wait a second here for that
12 to catch up.

13 So, I am from the Sandia National
14 Laboratories, and I have worked for the
15 Department of Energy as a contractor on both
16 WIPP and Yucca Mountain. I'm here today
17 speaking for myself, and speaking only about
18 my experience on WIPP. I worked on WIPP from
19 1989 to 1998.

20 Obviously, quite a lot of what I
21 say is based on the work of other people, and
22 I'm sorry I can't acknowledge them all. There

1 are hundreds and hundreds of people who have
2 worked on this.

3 So, can I have the next slide,
4 please?

5 I have three points I want to try
6 to cover. One is a very brief summary of the
7 role of science programs supporting the WIPP
8 project, then a couple of remarks on the long-
9 term regulations. These are the regulations
10 that affect 10,000 years. They are not the
11 operational regulations that Mr. Curry spoke
12 about. Most of my work and most of the
13 science program has focused on the long-term
14 performance, and then I'll say a little bit
15 about the work we actually did evaluating that
16 performance to meet the regulatory
17 requirements for certification.

18 Next slide, please.

19 All right, just on the top left
20 there, that's WIPP in 1975, and there it is
21 down at the bottom.

22 One of the important points there

1 is that we had continuity in scientific
2 leadership, primarily from Sandia National
3 Laboratories as a science advisor, from 1975
4 to the present. There were many other
5 laboratories and contractor organizations who
6 also worked on that science program.

7 Went through a couple of phases.
8 In the early years it was site selection, site
9 characterizations, and contributions to the
10 design of the facility, primarily in the shaft
11 seals.

12 Then, in the mid-1990s, the
13 science program focused on demonstration,
14 evaluation, and then, when we were sure,
15 indeed, we were in compliance, then
16 demonstration in a regulatory sense that we
17 were in compliance with those EPA
18 requirements.

19 The science program goes on today
20 supporting operations and the ongoing
21 recertification. That's an important point.
22 The EPA, the national EPA at the federal

1 level, continues to review the basis for the
2 compliance with the 10,000-year standard.

3 Next slide, please.

4 These just are some examples of
5 the types of work that went into the science
6 program: geologic studies, geophysics,
7 hydrologic testing, and so on. One example
8 there in the middle of the shaft seal design,
9 that's important. That's one of the reasons
10 that salt was chosen at WIPP, and it's a
11 positive attribute of the site.

12 The salt is actually relatively
13 easy to seal with a sequence in green down
14 there at the bottom of alternating segments of
15 clay, concrete, and crushed salt. The crushed
16 salt will compact under the pressure of the
17 surrounding rock to achieve a very low
18 permeability.

19 Next slide, please.

20 All right, a couple of remarks
21 here on the regulation. There's something I'm
22 trying to get at here. I believe the way the

1 long-term regulation is written does do quite
2 a lot in how we frame both the selection of a
3 site and the science program done to evaluate
4 it.

5 First, the regulation, it's EPA 40
6 CFR Part 191, first written and first
7 promulgated in 1985, updated in 1993 and 1994.
8 That's a generic regulation. In principle, it
9 applies to any new repository we might have
10 today. As Chris Whipple noted earlier this
11 morning, it is in some ways out of date and is
12 inconsistent with other programs
13 internationally.

14 But the first point there, and
15 this remains true for the regulations used on
16 Yucca Mountain, compliance is based on
17 reasonable expectation, which basically is
18 founded on the concept that you can't prove,
19 there's no absolute proof over very long time
20 periods. Instead, what you're looking for is
21 a reasonable expectation that the standards
22 are met.

1 It is a probabilistic standard in
2 the sense that you must consider all the
3 uncertainties and show a distribution of
4 possible future states of the system and
5 acknowledge that you are uncertain about what
6 the final state will be.

7 And there's a 10,000-year
8 containment standard. That turns out to be
9 the dominant standard for WIPP. The others,
10 there is a dose standard and a ground
11 protection standard.

12 Because the 10,000-year
13 containment standard focuses very heavily on
14 human intrusion, drilling for oil and gas,
15 because of that focus, it turns out to be
16 essentially the only one that matters at WIPP
17 for the long-term performance.

18 The bottom point there, 40 CFR
19 194, that's the WIPP-specific implementation
20 that the EPA wrote just for WIPP. It does not
21 apply to any other site that might exist.

22 A key point there is that it

1 actually went ahead and specified the approach
2 the applicant should use for determining the
3 rate of future human intrusion. We ended up
4 with a regulatory basis for compliance that
5 includes multiple intrusion events in the
6 future. They're hypothetical, but we take
7 into account that there will be many such in
8 the future.

9 Next slide, please.

10 All right, so what goes into these
11 long-term performance evaluations? First, you
12 need a good understanding of the processes
13 that might occur or what the state of the
14 system might be. That's down in the bottom
15 left. That's just a schematic that shows what
16 it might look like today and what it might
17 look like 50 years from now in the
18 underground, 50 years, quite quick. The salt
19 will creep in, the drums will start to be
20 crushed. The primary barrier at that point
21 becomes the salt itself.

22 But there are a host of

1 complicated processes that go into that: flow
2 of water, trapped brine in the salt into the
3 repository, corrosion processes generating
4 hydrogen gas. It's a complicated process.

5 Then you build numerical models
6 that will allow you to capture the uncertainty
7 associated with that. That's the top left.
8 You can string them together into a big
9 modeling system, and you produce, down in the
10 bottom right, in this case, that's a range of
11 possible pressure conditions in the
12 underground over 10,000 years.

13 I like to use that slide because
14 it shows -- and this is actually from the
15 application to the EPA in 1996 -- it shows
16 that, at the time we felt we were ready to go
17 ahead and submit an application to the
18 regulator, we acknowledged uncertainty in the
19 pressure condition, something as basic as,
20 will it be at high pressure or low pressure in
21 the underground? That's a range that goes
22 from lithostatic, the pressure of the

1 surrounding rock, to below hydrostatic, lower
2 than the pressure of a water column. The
3 important point from that is that performance
4 was acceptable throughout that range.

5 Next slide, please.

6 All right, so what did we learn
7 about the overall performance of the WIPP?
8 The first point, and these are the points,
9 this is our understanding of it at the time of
10 the application in 1996 to the EPA. The
11 observations remain accurate today.

12 Essentially, no releases in 10,000
13 years are anticipated from undisturbed
14 performance from the site. If people don't
15 drill into it, nothing gets out. And as a
16 consequence of that, associated with that
17 observation, uncertainty in both the natural
18 and the engineered systems contribute very
19 little to uncertainty in overall performance.

20 We acknowledge uncertainty in
21 things like the pressure history of the
22 underground. It didn't matter. The site

1 performs very well under a broad range of
2 conditions.

3 What is performance sensitive to?
4 Assumptions about future human actions, which
5 are, frankly, unknowable, I believe. They're
6 very difficult to assess. How many times in
7 the future would someone drill into the site,
8 if it at all? That's what WIPP is sensitive
9 to, and that's basically what EPA ended up
10 facing a regulatory decision on. And the
11 decision was that the estimated releases from
12 human intrusion are well below the containment
13 limits.

14 And I'm going to go there to my
15 last slide. Some thoughts here on the process
16 of developing a disposal system. Others have
17 said things like this earlier, but I'm going
18 to agree with them.

19 Establish the regulatory framework
20 first. It really does matter in ways that are
21 maybe hard to see before you start, but
22 looking back afterwards, it helps very much to

1 know what the regulatory framework is before
2 you set down the path.

3 The middle bullet here, build
4 confidence in the scientific foundation. I am
5 a scientist. This should be what I do. But
6 you need a viable concept to start with and
7 you need a good site. You don't need a
8 perfect site. We're not looking for the best
9 possible site. We're looking for a good site
10 that is safe.

11 You need to do sound science and
12 sound analysis with full documentation. That
13 means acknowledging uncertainty. It means
14 acknowledging what you don't know about the
15 site.

16 You build confidence through
17 independent external review. The
18 Environmental Evaluation Group in New Mexico
19 that Lokesh was basically the chief scientist
20 for for many years, I fully acknowledge the
21 importance of their role.

22 The National Academy of Science

1 maintained a review committee on WIPP. Chris
2 Whipple was a member of it. That was
3 critical.

4 And we conducted international
5 peer reviews. Those were important.

6 My last point, and I apologize for
7 running over, in the end, it is not science
8 that decides; it is the regulator. We like to
9 think we would let science decide. No,
10 science's job is to inform a regulatory
11 decision. So, acknowledge the regulator
12 starts the process and it has the critical
13 decision point at the end.

14 Thank you.

15 CO-CHAIR HAGEL: Dr. Swift, thank
16 you, and to each of you, again thank you for
17 your excellent presentations.

18 Questions? Allison?

19 MEMBER MacFARLANE: Okay. I have
20 a bunch of questions.

21 So, let me ask, first, let me just
22 go to Don Hancock and say, okay, we're not a

1 siting committee. So, we're not going to pick
2 WIPP. I'd just make that clear ahead of time.

3 But I'm curious about what you
4 think what kind of entity is appropriate for
5 managing a repository.

6 MR. HANCOCK: I think one of the
7 things that would be useful for the Commission
8 to think about is, are there various entities
9 that are important for various aspects? If
10 you really are going to do a science-based
11 national siting program, why don't you have
12 scientists do that program? That's different
13 than having the scientists, then, select
14 whatever sites you're going to have. And who
15 operates the facility, again, may be a
16 different entity.

17 I think I want to agree with what
18 a lot of other people said. The independent
19 regulation is important. And just to show
20 that this is an ongoing thing, I spent 10 of
21 the 30 days in June in negotiations with more
22 than a dozen WIPP officials and members of

1 Secretary Curry's Department and other citizen
2 groups working on that renewal permit that the
3 Secretary talked about, and agreeing with some
4 changes. Actually, the Department of Energy
5 and we agreed on a lot of changes.

6 So, the operational phase, there
7 needs to be, there can still be a lot of
8 involvement by states, by citizens, in terms
9 of doing it. That's why I think what happens
10 with WIPP for the next 20 years or so is very
11 important.

12 If WIPP works, if the safety, the
13 start clean/stay clean works at WIPP, that
14 improves dramatically the Department of
15 Energy's credibility and its contractor's
16 credibility to be able to safely operate the
17 facility. That doesn't solve the siting
18 problems that have already been said.

19 The Department of Energy, when it
20 comes to siting, whether it's WIPP or whether
21 it's Yucca Mountain or whether it's first- and
22 second-round sites, has a horrible history.

1 By the way, to offend a few people, Congress
2 has a pretty horrible history of picking
3 sites, too. So, we need somebody different
4 than DOE and Congress to pick sites, if we are
5 going to have disposal sites.

6 MEMBER MacFARLANE: Okay. Can I
7 ask a couple more questions really briefly?

8 One to Mr. Heaton, or, actually,
9 it's Mr. Heaton mentioned that there was a
10 limited volume for WIPP to 176,000 cubic
11 meters. That's a limited volume for the
12 waste?

13 REPRESENTATIVE HEATON: It is a
14 limited volume for the waste, and it is an
15 arbitrary decision that was made by Congress,
16 based on what they thought the inventory would
17 be.

18 MEMBER MacFARLANE: And what is
19 the current thinking about whether that volume
20 is going to be met or overshot or what?

21 REPRESENTATIVE HEATON: For
22 transuranic, it is probably going to be

1 probably pretty close to being on target.

2 MEMBER MacFARLANE: Right.

3 REPRESENTATIVE HEATON: It may be
4 a little more than what's anticipated. It
5 depends on how much is pulled from
6 underground, other kind of geologic placement
7 of waste in shallow pits.

8 MEMBER MacFARLANE: Right. And
9 then be careful what you ask for in terms of
10 wanting a processing facility there because
11 you would need to expand the WIPP just for the
12 intermediate-level waste.

13 But you wanted to jump in?

14 MR. HANCOCK: The DOE's
15 recertification application to EPA has to look
16 at those limit issues on a regular basis. So,
17 DOE is currently saying that WIPP has more
18 room than the waste that's going to go into
19 it. In other words, that 176,000 cubic
20 meters, 6.2 million cubic feet limit right now
21 seems more than adequate.

22 As I mentioned in my longer

1 presentation, there are, therefore, lots of
2 ideas, some of which are going to be coming
3 out in the next month or so of putting more
4 waste in that, in fact, I believe is going to
5 bust those limits.

6 So, again, we have this ongoing
7 issue of, do we stick to our contracts? Do we
8 stick with the law? Or under what
9 circumstances do we break them?

10 MEMBER MacFARLANE: Right, right.
11 And then, one final quick question to Peter.
12 What should a standard look like?

13 DR. SWIFT: The question was, what
14 should a standard look like?

15 MEMBER MacFARLANE: Yes, for a
16 regulatory framework for a high-level waste
17 repository.

18 DR. SWIFT: Well, I can only
19 answer that speaking for myself, obviously.

20 MEMBER MacFARLANE: Yes, I know.

21 DR. SWIFT: Because it's a
22 question that we --

1 MEMBER MacFARLANE: You have lots
2 of expertise. So, forget about Sandia and
3 anything else.

4 DR. SWIFT: I would suggest that a
5 good place to start would be to look at the
6 guidelines offered by the IAEA, the
7 International Atomic Energy Agency, and which
8 are dose- or risk-based, as you mentioned
9 earlier when Chris Whipple was talking.

10 MEMBER MacFARLANE: Okay. Thanks.

11 CO-CHAIR HAGEL: Thank you.

12 Anybody else want to respond to
13 Allison's comments?

14 (No response.)

15 Jonathan?

16 CO-CHAIR LASH: I had a quick
17 question for Representative Heaton.

18 Thank you for your very clear
19 explanation, both of the history and of why
20 Carlsbad took the position it did.

21 One of the things that really
22 stood out in your description was that you

1 have built a relationship of some trust with
2 DOE and the operators. What we have heard in
3 many other cases is deep distrust of the
4 federal government, not just DOE, but of the
5 Congress to live up to what commitments were
6 made.

7 I'm wondering what has persuaded
8 you that in the long-term the federal
9 government will live up to those commitments
10 that led you to accept this facility.

11 REPRESENTATIVE HEATON: You know,
12 our relationship with DOE in our community has
13 been fabulous. They have been very open, very
14 transparent. They had meetings over and over
15 again, invited us to watch containers being
16 dropped, brought back pictures of all of that
17 happening, had routine meetings in the
18 community. And I can't think of any time that
19 they violated any of the promises that they
20 made to us as a community. I think that
21 that's extraordinarily important. They spent
22 a lot of time in the educational process. So,

1 I think that is a really critical area.

2 We constantly asked ourselves
3 about safety. I mean it was a question that
4 came up all the time in the community and with
5 their quarterly meetings, and sometimes
6 monthly meetings, with anybody in the
7 community that wanted to come. And finally,
8 it got to the point where we really said we
9 don't know what we would add, if we were going
10 to improve the safety, other than just
11 operational management. So, the relationship
12 has been very good.

13 CO-CHAIR LASH: That is very
14 helpful. I just noticed there's some Nevadans
15 sitting behind you shaking their heads.

16 (Laughter.)

17 REPRESENTATIVE HEATON: Oh,
18 different places had different experiences.
19 Ours was extraordinary.

20 CO-CHAIR HAGEL: Susan, did you
21 want to add something?

22 MEMBER EISENHOWER: Yes, actually,

1 to that point, I mean today an intriguing
2 picture of DOE emerges as rather contradictory
3 in nature. Does anyone have an explanation
4 for why it has -- I mean I don't know enough
5 about the organizational chart of DOE, but I
6 would love to have some other -- I mean
7 because, clearly, it has to take place at the
8 operational level or at least there would be
9 more consistency if it were higher up.

10 REPRESENTATIVE HEATON: One of the
11 things I might say about our community, and we
12 have two national labs in the State, which I
13 think everybody appreciates in the State to a
14 large degree and think that they are also,
15 more or less, crown jewels for our State. But
16 our experiences with DOE in our part of the
17 State, we really didn't know much about them.
18 If you go to Nevada or some of the other
19 places where they had already had experiences,
20 then maybe that changed their opinions and
21 their preconceived ideas about what they
22 thought about DOE. We didn't really have any

1 preconceived ideas. They were a partner of
2 ours as we moved in through the process.

3 CO-CHAIR HAGEL: Per?

4 MEMBER PETERSON: My question is
5 for Dr. Chaturvedi and others, if they might
6 want to chime in.

7 The principal idea behind deep
8 geologic isolation is that, if you select
9 geologic formations that have been stable for
10 very long periods of time, at depth they don't
11 change rapidly, and therefore, you can project
12 their behavior out into the future more
13 accurately than you can certainly for things
14 that will happen at the surface. And that
15 means that you can have some confidence in
16 long-term performance, particularly, as Peter
17 mentioned, for the undisturbed performance of
18 a repository.

19 But the other dimension that is
20 very important and was mentioned multiple
21 times is the question of what happens to
22 humans over these time scales as well. We

1 think of, actually, some possibilities for
2 deliberate intrusion, but we license, also, we
3 have criteria related to inadvertent
4 intrusion. It is very difficult to predict
5 precisely what those rates might be because of
6 the obvious difficulty in projecting how
7 society is going to evolve over millennia, given
8 how much things have changed over the last
9 several millennia for us.

10 So, the question is, is there some
11 merit potentially in changing that probability
12 through things such as preemptive extraction
13 of value materials? In fact, there was a 1996
14 National Academy review for WIPP that
15 recommended DOE consider preempted extraction
16 of the potash deposits. And one could
17 envision, with modern horizontal drilling
18 technologies, doing things that could extract
19 oil and gas as well.

20 Is this something that can be done
21 potentially to at least modify these
22 probabilities of inadvertent human intrusion?

1 DR. CHATURVEDI: This is a
2 question that EPA grappled with in developing
3 40 CFR 194, which is the implementation of the
4 standards for CFR 191, and, also, in the 1985
5 40 CFR 191 standard as well, and this idea of
6 how to predict the human behavior in the
7 future.

8 And EPA decided that, because of
9 the uncertainty of human behavior in the
10 future, they would assume or they asked the
11 WIPP team to assume the present is the key to
12 the future. So, they asked WIPP specifically
13 to assume the drilling rate per square, per
14 acre, for example, would remain the same as
15 the average of the last 100 years. And in
16 each recertification, that 100-year average
17 moves, and as the drilling rate has enormously
18 increased in the last 20 years, that rate has
19 increased.

20 Logically, of course, one can
21 argue the oil and gas wells will last no more
22 than 100 years. All the oil and gas might

1 have been, will have been taken out.

2 But, then, the opposite argument
3 is there may be some other reasons why future
4 generations may drill that we cannot predict.
5 So, this whole question had a lot of input
6 from futurologists and social scientists, and
7 so on. It's beyond the scope of just this
8 scientific inquiry, and the regulations were
9 developed that way.

10 MEMBER PETERSON: That's a good
11 explanation. But, on the other hand, these
12 are, by definition, non-renewable resources
13 that now are conserved. So, once it's gone --

14 DR. CHATURVEDI: That's why the
15 point that I emphasize with respect to a
16 resource-rich site is, will you be able to
17 find enough real estate to create a
18 repository? Because at least in the vicinity
19 of the WIPP area, and I haven't looked at it,
20 but I mean if you look at the aerial map of
21 the location of oil and gas wells, the only
22 place where oil and gas wells have not been

1 drilled around the WIPP site are where there
2 are potash resources, and BLM, the Bureau of
3 Land Management, would not give permit to
4 extract oil and gas at a deeper level until
5 the leases for potash minerals have been
6 worked out.

7 So, it is a very intensely-drilled
8 area. My fear is, of course, the public
9 perception and NRC licensing procedure, and so
10 on, do we really want to create another
11 repository in an area which has so many
12 resources, regardless of the logical questions
13 that you raise that this may not be forever?
14 I mean oil and gas will have been extracted,
15 yes, you are absolutely correct about that.

16 CO-CHAIR HAGEL: Thank you.

17 Senator Domenici?

18 MEMBER DOMENICI: Thank you, Mr.
19 Chairman.

20 Let me just make an observation.
21 During the early history of this project, it
22 could be said that there would be very few

1 communities that wanted a nuclear waste
2 disposal site located within their boundaries.
3 You closed your comments to the Commission
4 with remarks that seemed to be saying that in
5 the future many communities are going to see
6 the positive nature of this kind of facility
7 and there will be plenty of them that want the
8 facility. Did I read you right?

9 REPRESENTATIVE HEATON: I believe
10 that, Senator, that there will be a number of
11 places set up. It depends on the medium, of
12 course, that is chosen. If salt is chosen,
13 there are a lot of salt deposits around the
14 country. If it's granite or if it's some
15 other, tuff, or whatever that is chosen, that
16 will limit the choices.

17 Also, if you're going to choose
18 salt and you are thinking about recycling used
19 fuel, you wouldn't want to put used fuel, I
20 wouldn't think, in a salt repository that is
21 going to close on itself. You would want to
22 only put recycled waste into the repository,

1 is what I would, that is, indeed, waste, not
2 to be thought of as being used again.

3 MEMBER DOMENICI: So, that leads
4 to a question regarding quality of acceptance.
5 Do you believe the Commission should consider
6 saying that only those communities which are
7 desirous of the site should be considered for
8 a site, thus, in a sense, disposing of the
9 question of veto right upfront? If they want
10 it, they have indicated their desire, and
11 there would not have to be a veto power.

12 But don't put the two together.
13 Just answer them separately.

14 REPRESENTATIVE HEATON: Well, I
15 think, again, first of all, deciding what the
16 medium is, and then those communities that are
17 within those mediums or that medium that is
18 chosen should be the ones looked at, and then
19 move on into the state agreement in order to
20 get there.

21 MEMBER DOMENICI: And they should
22 want it?

1 REPRESENTATIVE HEATON: And then,
2 geologically, they need to be proved out. But
3 those communities that want it; otherwise, I
4 think we're wasting a lot of time and money,
5 if it is going to be refuted subsequent to
6 acceptance.

7 MEMBER DOMENICI: What would you
8 say the acceptance of the facility there in
9 your city is now? How would you qualify it as
10 to the citizenry? Are they in favor of it?
11 Substantially? Large numbers?

12 REPRESENTATIVE HEATON: In all of
13 southeastern New Mexico, I would suggest that
14 there would be wide acceptance. In Carlsbad
15 itself, I would suggest 95 percent of the
16 population would support a facility, just
17 because of the knowledge that we have gained
18 through the years about the whole process.

19 MEMBER DOMENICI: Thank you.

20 CO-CHAIR HAGEL: Vicky?

21 Thank you, Senator.

22 MEMBER BAILEY: I apologize, Mr.

1 Hancock, I stepped out of the room for a few
2 minutes. You may have already responded to
3 this.

4 But in your written remarks, and
5 you did emphasize this in your presentation,
6 that WIPP was not a suitable site for high-
7 level waste or irradiated fuel from commercial
8 reactors. It's not designated for such waste.
9 It's not characterized for such waste. It's
10 not technically suitable.

11 Did you go into more about what
12 your basis or assumptions? Is it because the
13 science isn't there? You go more into some of
14 the other issues about the fact that the
15 contract and all that did not allow for it,
16 but --

17 MR. HANCOCK: Well, yes, we can go
18 into the technical issues. Dr. Chaturvedi
19 mentioned some of them.

20 You have oil and gas all around
21 it. You're going to have a great deal of
22 difficulty finding a place at or around the

1 WIPP site that would be able to maintain.

2 Secondly, since 1978, the U.S.
3 Geological Survey recorded and analyzed
4 negative characteristics of salt when it comes
5 to hot heat-generating waste, which the
6 transuranic waste at WIPP has very little of,
7 but irradiated fuel especially, and high-level
8 waste, some high-level waste is quite
9 physically hot, which is going to cause a lot
10 of movement. And while WIPP is dry, it is not
11 bone dry. So, that is going to mobilize some
12 of the water that is there to move around and
13 increase the corrosion problem.

14 Thirdly, the nature of the
15 facility and the salt in the area also is
16 associated at levels underneath the repository
17 horizon with brine pockets, pressurized brine
18 that will flow to the surface.

19 So, if you think of the BP oil
20 spill, the oil is a mile under the ocean, but
21 when a hole penetrates it and there is no well
22 there, what comes out? Oil and gas comes out.

1 If you penetrate below the
2 repository horizon at WIPP, brine comes up and
3 comes all the way to the surface. It's under
4 artisan pressure. So, again, those are
5 characteristics that are not suitable, in my
6 view, for high-level waste or irradiated fuel.

7 And if you have standards, going
8 back to the issue of shouldn't we have
9 standards and then look for sites, if you have
10 standards, my guess is you're not going to
11 have standards that say those are suitable
12 characteristics for irradiated fuel and high-
13 level waste.

14 MEMBER BAILEY: So, there is no
15 technical or constructive way in which the
16 site could be expanded at all, in your mind?
17 The mission of it cannot be expanded?

18 MR. HANCOCK: Well, Dr. Peterson
19 posed an interesting question. Well, why
20 don't we just take all of the oil and gas, et
21 cetera, out, and then what would be left would
22 not be useful? That was one of the original

1 concepts at the first site, the Lyons, Kansas
2 site, in the 1970s, which was solved in an
3 area that there was drilling going on. At
4 that time, they found out they had problems
5 because they couldn't know for sure that they
6 had sealed all the shafts, et cetera, and
7 water could move around pretty quickly.

8 So, there are lots of questions
9 like that that would have to be looked at. As
10 I say, I think there are many technical
11 reasons why WIPP doesn't work for high-level
12 waste and spent fuel, as well as all of the
13 other reasons that have been mentioned.

14 MEMBER BAILEY: Any other
15 panelists like to -- yes, Peter?

16 DR. SWIFT: Yes, I think it would
17 be useful to separate the discussion here from
18 WIPP itself to salt as a medium. I don't
19 think, at least I'm not here certainly to talk
20 about whether WIPP is a suitable site. That
21 is one of those things that is off the table
22 for me as a question.

1 But I do think it is worth
2 considering the viability of salt generically
3 as a potential medium for disposal of high-
4 level waste. And there are unanswered
5 questions there, and Lokesh has certainly
6 addressed some of them. How the salt responds
7 in contact with heat, where whatever brine is
8 in the salt, where it goes in a hot
9 environment. Those are valid questions and
10 should be looked at.

11 I don't think that we should
12 necessarily take a discussion of WIPP here and
13 apply it to the concept of disposal in salt
14 generically.

15 MEMBER BAILEY: Okay. Thank you.

16 I'm sorry. Yes?

17 REPRESENTATIVE HEATON: If I could
18 comment?

19 MEMBER BAILEY: Yes.

20 REPRESENTATIVE HEATON: First of
21 all, on the oil and gas issue, WIPP is
22 isolated; 16 square miles is isolated. There

1 won't be any drilling through it, and I think
2 the assumption that at some point there's
3 going to be drilling through the site implies
4 that society is gone, that we no longer have
5 any records, no longer any capability of
6 restricting drilling through the site. So, I
7 mean, you have to envision that, that the
8 planet is devoid of people for some period of
9 time, or what have you.

10 I think the issue related to heat
11 in the salt, there is a small amount of what
12 is called conant water within the salt, and it
13 would probably be attractive, but there is
14 very little of that. And whether it would
15 make any difference in the solubility, right
16 now we are putting a substance in, magnesium
17 oxide. It is the only engineered barrier that
18 is used at WIPP. The formation itself is the
19 barrier.

20 MEMBER BAILEY: Is the barrier?

21 REPRESENTATIVE HEATON: So, we use
22 magnesium oxide. There are a couple of energy

1 levels that increase the solubility of
2 plutonium. So, this avoids that.

3 So, I think that this idea that
4 the conant water would come flowing in is a
5 little bit something that needs to be
6 researched. So, I think that that is an
7 issue.

8 The container was brought up as an
9 issue. When you put something in WIPP or you
10 put it in salt, that container is eventually
11 going to be crushed, whatever it is, and it is
12 going to be encapsulated by the salt. So, I
13 think retrieval is not something you think
14 about when you are thinking about salt.

15 And then this idea that there is
16 pressurized brine down below that is somehow
17 is going to be heated up and come pouring into
18 the formation I think is something that is a
19 pretty far-fetched idea, from my perspective.

20 Sandia has actually worked on how
21 you would place containers. And as you know,
22 the fission materials in the waste are what

1 are causing the heat, and the fission
2 materials decay rather rapidly in terms of
3 geologic time, 30-year average half-life. So,
4 in 300 years, the fission materials are
5 actually completely decayed. So, all you have
6 left really are the actinides and plutonium
7 constituents. So, I think that those are all
8 part of the consideration.

9 As time goes by, the heat drops.
10 So, all of those implications change.
11 Clearly, a place for study for salt.

12 MEMBER BAILEY: Okay. I
13 appreciate it.

14 DR. CHATURVEDI: May I?

15 MEMBER BAILEY: Sure, sure.

16 CO-CHAIR HAGEL: Since we're 15
17 minutes over now, you go ahead and you've got
18 the last word.

19 Then, we're going to break for
20 lunch, and we get back here in 45 minutes.

21 Doctor?

22 DR. CHATURVEDI: I just wanted to

1 say this, in agreement with what Dr. Swift
2 said and what Representative Heaton said. In
3 my remarks, I was very careful in saying, if
4 container integrity is desired, salt is not
5 the place.

6 But I do concede that salt,
7 otherwise, is a good medium that will entomb
8 the waste. So, if we are willing to give up
9 on container integrity, then, in other words,
10 what Peter Swift said, this is not a generic
11 refutation of embedded salt, but these are the
12 questions I raise about the WIPP area in
13 particular.

14 And because we just went through
15 the process of designing this very robust
16 titanium container for Yucca Mountain, the
17 question does arise: are we going to give up
18 on the container integrity? And that's all I
19 was saying.

20 CO-CHAIR HAGEL: Thank you.

21 Gentlemen, an excellent panel.

22 Thank you very much.

1 We are going to be back here in 45
2 minutes.

3 We'll start with Dr. Parker at
4 1:30.

5 Thank you.

6 (Whereupon, the foregoing matter
7 went off the record for lunch at 12:44 p.m.
8 and went back on the record at 1:39 p.m.)

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

2 1:39 p.m.

3 MR. FRAZIER: Okay. Now we are
4 really going to get started. If the
5 Commissioners would please take their seats?
6 Everyone else, sit down.

7 We will get started with this
8 afternoon's session. We're just missing a few
9 Commissioners, but they're coming in. So,
10 we'll go ahead and get started.

11 Mr. Lash?

12 CO-CHAIR LASH: Thank you, Tim.

13 And welcome back to everyone.

14 To our witnesses and members of
15 the public who are with us, we apologize for
16 the delay. We ate as fast as we could. You
17 wouldn't want us to come back hungry and
18 grumpy.

19 We have a set of witnesses this
20 afternoon whom I have been looking forward to
21 hearing from. But before we call the first of
22 them to join us, I do want to re-emphasize one

1 thing about this Commission, after listening
2 to some of the discussion earlier on.

3 As my Co-Chairman said at the
4 beginning of the morning, this is a policy
5 Commission, not a siting Commission. We will
6 do our best to make recommendations on
7 approach and process, but we are going to
8 carefully refrain from making any specific
9 recommendations about places and choices of
10 specific alternatives.

11 I want to open this afternoon by
12 welcoming Dr. Frank Parker. Dr. Parker, in
13 some ways, the report that you chaired for the
14 National Academy could really lend its title
15 to this Commission: "Rethinking High-Level
16 Nuclear Waste". It was an extraordinary
17 effort. I think it has shaped people's
18 thinking ever since.

19 Dr. Parker has been involved in
20 these issues, like so many of our witnesses,
21 for a very long time. He has made an enormous
22 contribution and has a huge reputation in the

1 field.

2 We're honored to have you with us,
3 Dr. Parker.

4 DR. PARKER: Thank you very much
5 for that very gracious introduction. I think
6 I'll sit down now. But those who know me know
7 that's impossible.

8 (Laughter.)

9 I think it is very clear from what
10 we have heard this morning, and the fact that
11 we're at the state that we are right now, that
12 the system is broken. I don't, obviously,
13 have time to go through all the details. So,
14 on my slides I have highlighted in yellow the
15 parts I'm going to talk about, and the rest of
16 the slides will be in red, which will be the
17 filler material that will give you the
18 background that will make it possible to
19 understand what I'm driving at.

20 Because the system is broken, it
21 is clear that the prevailing laws and
22 regulations will have to be changed. The fact

1 is that we all know that nothing is forever,
2 even diamonds, and the same thing is true, of
3 course, about death and taxes. Maybe they are
4 forever, but nothing else.

5 So, I think people sitting at the
6 tables here have a unique opportunity to make
7 the process transparent, sustainable,
8 believable, and hopefully successful. I
9 think, unless we set some guidelines like
10 that, it is very difficult to get to an
11 endpoint.

12 So, we will have to look at a
13 bullet approach. But I would like to respond
14 to the three questions that you asked.

15 And the first one is, do we need a
16 disposal facility? And the answer is
17 unequivocally, yes, we do need it. And I will
18 discuss in my talk, what it might be.

19 In response to the question that
20 was raised about surface storage, centralized
21 versus at the plants, I think I should like to
22 refer you to a report that was published by

1 the congressionally-appointed committee to
2 review monitored and retrievable storage. The
3 report I think is an excellent report, since
4 I was one of the three Commissioners that the
5 Congress appointed.

6 Dale Klein, who was one of the
7 other Commissioners, still to this day says
8 that, if they had followed the advice that we
9 gave, that we wouldn't be in as sad of shape
10 as we are right now.

11 I think the report not only was
12 good, but the fact that nobody liked it, the
13 pro-nuclears or the anti-nuclears, we must
14 have hit just right on the head.

15 On the second question on
16 alternate approaches, I will refer to that in
17 my talk, and the same thing to the development
18 process.

19 May we have the next slide,
20 please? Next slide, please.

21 As you can see, I have blocked out
22 or made in red the filler material, very

1 important, but some of the material has
2 already been spoken about.

3 I think I want to emphasize two
4 things. The First International Meeting on
5 Radioactive Waste Disposal took place in 1959.
6 At that time, the techniques to solidify and
7 immobilize the waste were already presented.
8 They had already been demonstrated at the
9 bench scale in the laboratory, and we were on
10 the verge of going to Project Salt Vault,
11 where it was demonstrated at full pilot scale,
12 and yet, 50 years later, nothing has happened.
13 Hanford has not vitrified a single ounce of
14 material, and we have no high-level waste
15 disposal facility in the U.S.

16 I'm going to refer briefly to
17 rethinking, because thank you for the kind
18 remarks. It's, I think, a wonderful report,
19 and I have to point out that Chris Whipple was
20 a member of that Committee, and Tom Isaacs,
21 who is still sitting here. I guess I drove
22 Chris away. Tom was also a member of that

1 report. So, we had a marvelous Committee.

2 Next slide, please.

3 I will say a few words about that,
4 but I also want to refer to the low-level
5 waste disposal problem in this country. It
6 also is broken.

7 And most likely, its impacts are
8 greater than the high-level radioactive waste
9 because right now, for most institutions
10 around the country, there is no place for them
11 to send their Class B and Class C wastes. So,
12 it is a major problem for these sites,
13 including the power plants, but I am thinking
14 more of the medical facilities. They have to
15 store it themselves. So, it is a problem that
16 needs to be fixed, but I don't have time to go
17 into that.

18 But I might say I think it is
19 within your purview because you are looking at
20 the back end of the fuel cycle and, I quote,
21 "materials derived from nuclear activities".
22 And low-level waste fits that category.

1 If we can go to the next slide,
2 please?

3 The next slide is taken directly
4 from Dr. Crowley's talk before the full
5 Commission. And again, because of time
6 limitations, I won't repeat that.

7 I want to look at the very first
8 line there, the first bullet. It says that,
9 over the last decade, if we continue the way
10 we were, we are not likely to succeed. The
11 only thing I would change in that is the last
12 three decades we are unlikely to succeed.

13 I think we need to take into
14 account the social science problems. One of
15 the reasons I think this report was so
16 successful, we had philosophers and social
17 scientists playing a prominent role in it.
18 So, we looked at it in a more holistic sense.
19 I think that's why for this Commission
20 particularly that that report reflects that,
21 and it will be very helpful for you.

22 May I have the next slide, please?

1 I want to emphasize again what I
2 just said, that a strictly technical solution
3 will not work. This is a multidimensional
4 problem, a multi-value problem. And the new
5 words that I have learned is it's value
6 complexity, rather than a multi-attribute
7 utility theory that only few people in this
8 world know what I'm talking about, but
9 everybody can understand the complex set of
10 values that are involved.

11 I want to talk -- next slide,
12 please -- of a few other highlights. First,
13 we have to bring the report up-to-date. We
14 have learned a lot about siting and a lot what
15 we can do scientifically.

16 I think we need to make it very,
17 very clear that limiting proliferation is the
18 most important topic in front of us. I was
19 with the first American troops into Nagasaki
20 after World War II, and I can tell you that's
21 not an experience anybody wants to repeat.
22 We're talking about kiloton bombs then, and

1 we're talking about megaton bombs now. So,
2 that for me at least has got to be the primary
3 focus, health, that you will take into account
4 in your policy deliberations.

5 Then, the second point I want to
6 make is that we need to look at the whole
7 question of reducing human exposure to
8 radiation. Many people don't realize that the
9 background for the average person in the
10 United States now has doubled over recent
11 years. And I am going to talk about that a
12 little bit later on.

13 Then, if we go to the next slide,
14 please, I think it's clear to me that anybody
15 who guarantees you something for a million
16 years is blowing smoke. They're smoking
17 something that I don't do, but I can only
18 figure that that's what happened. And it was
19 an Academy committee, I might say, which I
20 also totally disagree with.

21 May I have the next slide, please?

22 Also, I would like to talk about

1 the precautionary principle, which is popular
2 in Europe. I think it has some validity. But
3 here's an example of how it can go just too
4 far, talking about what we are going to do
5 when the sun goes down in 5 billion years.
6 I'm willing to take bets on that as long as I
7 can hold the stakes.

8 May I have the next slide, please?

9 If we are going to get someplace,
10 we have to set a goal. What should our goal
11 be? And I think one of them, of course, which
12 I mentioned in the very first slide is
13 sustainability. I am sure all of you are very
14 familiar with Madam Brundtland's report for
15 the United Nations. This is her definition.
16 I think it is pretty much the standard
17 definition of sustainability, and I think we
18 need to stick by that.

19 I should point out that, in fact,
20 I want to say a few words on that. She
21 references only two reports in her report on
22 nuclear waste, and they were both done for the

1 Swedish Academy of Sciences. The Co-Chairman
2 has given me some leeway to say a few extra
3 words about what Chris Whipple said, and I
4 wanted to say a few words about Sweden. So,
5 I hope you will give me an extra or minute or
6 two to say what I think really went on there,
7 and what's still going on now.

8 I might say that I was the lead
9 author on those two reports. So, I think her
10 report is terrific.

11 Also, you know the Scandinavian
12 countries are famous for their green point of
13 view, and Sweden, of course, is no exception.
14 As you also may know, there was a referendum
15 held in Sweden, and as a result, the
16 government there decided to phase out all
17 nuclear power. Of course, they have changed
18 their mind since because times have changed.

19 They submitted their program to
20 international review right from the very
21 beginning, the so-called KBS-3 report. And
22 the other thing that is very important in what

1 they did is it is a volunteer process. In
2 fact, the two sites that they finally came
3 down to look at were two existing -- oh, am I
4 through already? Wow, sorry. I'll have to go
5 faster -- were two existing nuclear sites, and
6 the losing site sued because they weren't
7 chosen.

8 I'll have to go much quicker now.
9 If we can go to the next slide, please?

10 I should say it is not necessary
11 to solve the problem, but we can't leave
12 future generations with anything further to
13 do. And therefore, we can only say what we
14 have confidence in, and that's something over
15 the next 100 years. If we've looked only at
16 a 100-year project -- the next slide, please
17 -- then there are a number of things that we
18 could look at as possibilities, and they are
19 listed on this slide. Again, I don't have
20 time to do that, but I want to go to the next
21 slide and talk about deep sub-sea sediment
22 disposal.

1 One of the advantages of deep sub-
2 sea sediment disposal -- go to the next slide,
3 please -- is shown here. It is that the
4 amount of naturally-occurring radioactivity in
5 the oceans is orders of magnitude greater than
6 all of the waste that would have gone into
7 Yucca Mountain. And then, there are many
8 other technical reasons, again, which I don't
9 have time to go into.

10 And if I could go to the second
11 slide after this one? That slide. Hold on
12 one second, yes. I need to spend just a
13 second on this.

14 If you look at the dose that the
15 average American is getting today, you can see
16 that 50 percent of it is from background.
17 Most of that is from radon and thoron. We
18 know how to reduce that.

19 And if you look at the bottom
20 part, medicine, this has gone out of sight.
21 It's 3 millisieverts per year. But what are
22 we spending all of our time and money on? As

1 you can see, it is that very thin red line,
2 and only a fraction of that is due to nuclear
3 power. So, we are spending money on basically
4 a non-existing problem if you are talking
5 about radiation exposure.

6 Because of time, I would like to
7 say a few more words, if we skip to a couple
8 more slides, please. Slide 17, yes,
9 Perspective 1.

10 And if you look at the situation
11 today, we look at Chernobyl, and what do we
12 see? The countries involved and the United
13 Nations agencies involved now say that the
14 major problem is not radioactivity; it's
15 poverty and lack of social and economic
16 opportunity. So, this myth that Chernobyl is
17 the end of all things just is not true.

18 If we go to the next slide, I will
19 just read the headlines. The laws are
20 contradictory and they're illogical. Those
21 laws and regulations need to be fixed, and I
22 list them there, but, again, I don't have

1 time.

2 If you go to the next slide, I
3 think it is clear that there are no
4 mathematically-optimal solutions. It would be
5 nice if that were the case, but that's not the
6 case at all. So, we have to look for what
7 might be societally-acceptable solutions.

8 Then, I would like to quote the
9 last sentence in that book, and the authors
10 say, are telling you what you really should
11 do. Then, they say, "Let's hope it works."
12 I think we have to say the same thing about
13 this.

14 And then, my final slide is a very
15 famous Italian, who is familiar to all of us,
16 said a long time ago, new ideas are not
17 welcome.

18 So, I hope you will excuse me with
19 that because there are no guarantees of
20 success. But without a new approach, I
21 believe there's not a chance that we will be
22 able to improve the situation at all.

1 Thank you.

2 CO-CHAIR LASH: Thank you, Dr.
3 Parker.

4 Would you remain for a couple of
5 minutes to take some questions?

6 DR. PARKER: Sure, I would be
7 happy to.

8 CO-CHAIR LASH: I'm sure that at
9 least 10 things you have said will provoke
10 dozens of questions.

11 So, Per, to you.

12 MEMBER PETERSON: Sure. I would
13 be happy to start off.

14 I think that you touched on most
15 of the major ethical questions that one needs
16 to consider, particularly in thinking about
17 appropriate standards for waste classification
18 and for repository performance.

19 And the quote, "How does man
20 maintain life on earth when the sun goes
21 extinct in about 5 billion years?" I think
22 does point to this question of

1 intergenerational equity.

2 DR. PARKER: Right.

3 MEMBER PETERSON: And when we
4 think about that, we often think about
5 different rates of return on investment.

6 DR. PARKER: Right.

7 MEMBER PETERSON: And we have
8 societal rates of return that cause us to
9 choose to invest in things like putting kids
10 through kindergarten.

11 DR. PARKER: Right.

12 MEMBER PETERSON: You know, that's
13 not a wise business decision.

14 DR. PARKER: Right.

15 MEMBER PETERSON: It's a good
16 societal decision. They're not going to be
17 productive for at least 30 years, some of them
18 40 or 50.

19 So, this question about how to
20 protect people into the future, into the
21 distant future, I think it is reasonable that
22 we do that. It's quite rational.

1 But my question is, we have other
2 ways where our activities are likely to cause
3 potential harm to future generations. We
4 believe that we may cause substantial change
5 to the climate, which is a global impact, from
6 use of fossil fuels. We expect that we may
7 have significant effects from acidification of
8 oceans that could have very substantial
9 effects. And then, we have the general
10 policies for the disposal of chemicals, which,
11 frankly, are not at all in the range of being
12 as protective as what we require for
13 radioactive materials, even those chemicals
14 which are permanently hazardous.

15 So, to what degree should we
16 strive to find standards for the disposal of
17 radioactive materials that are at least
18 consistent with some of the other things that
19 we also manage in terms of long-term hazards?

20 DR. PARKER: If I knew the right
21 answer to that, you guys would go home and
22 have nothing else to do.

1 But, more seriously, I don't think
2 we know how to do that yet. I think you're
3 talking about not only market cost, but what
4 we call externalities. We do a very poor job
5 of taking externalities into account. And if
6 we did, then things like reprocessing would be
7 totally out the window.

8 And even the land reposit, the
9 mining of ores which I didn't have time to
10 talk about, which are on the slide, mining of
11 ores leaves us with a big mess, and we are
12 spending billions to protect those sites with
13 nobody who lives around them, and we have
14 people living next door to that that are
15 living below the poverty level. So, I think
16 you are absolutely right, but that is a social
17 and political decision. That is not a
18 technical decision. I think the only thing
19 you can do with that is basically on an ad hoc
20 basis with the best information that we have
21 available, bearing in mind sustainability,
22 that we not leave future generations any worse

1 off than we are at present.

2 CO-CHAIR LASH: Allison?

3 MEMBER MacFARLANE: I found this
4 very interesting. Thank you.

5 A question on one of your slides.
6 You mentioned that the NRC and the EPA
7 regulations for some of the same materials
8 differ? Can you give me a specific example?

9 DR. PARKER: There are actually a
10 fair number of them, one of which is on
11 protecting. Some of them have 10 millirems
12 per year; others have 4 millirems per year;
13 others have 25 millirems per year.

14 What sense does it make to say
15 that drinking water is much more hazardous
16 which gives you 4 millirems a year, when the
17 overall standard is 25? The problem is still
18 the same thing.

19 I want to make clear -- it's on
20 one slide, but I didn't get a chance to say
21 it -- just using radioactive, bequerels and
22 curies, is not the right answer. Because

1 people talk about mobility; mobility is one
2 thing, but it is bioavailability that we have
3 to deal with.

4 MEMBER MacFARLANE: Right.

5 Uh-hum.

6 DR. PARKER: So, you can have an
7 enormous amount of material, for example, at
8 the WIPP site, which I think is terrific.
9 They had more radioactivity on the surface in
10 purifying, irradiating the sewage sludge than
11 will ever go into WIPP. So, it was totally
12 accessible, and I have never heard anybody say
13 that's a terrible idea.

14 So, you have to make that kind of
15 -- and that somewhat goes through the same
16 question that you raise. You have to put
17 these things into perspective.

18 MEMBER MacFARLANE: Okay.

19 CO-CHAIR LASH: Dr. Parker, I have
20 a question. Actually, Per, I expected you to
21 ask this question, but since you won't, I
22 will.

1 You referred to the importance of
2 having a consistent and rational set of
3 standards and, also, early on referred to the
4 role the National Academy has played. Could
5 you map for us a little bit what you see as
6 the role of the different agencies, the
7 National Academy, EPA, the NRC, in this
8 process?

9 DR. PARKER: Nobody is omniscient,
10 and even the Academy. Since the Director of
11 the Academy's Board on Radioactive Waste
12 Management is sitting right in the audience
13 and is a good friend of mine, I don't know
14 whether I really want to.

15 But, more seriously, I think the
16 structure of the way it is with EPA setting
17 the standards, by and large, and the Nuclear
18 Regulatory Commission carrying them out, leads
19 to conflict. And the Congress has been
20 unwilling to tackle that problem and has told
21 them to settle it among themselves.

22 And what I say in the report, it

1 would be good if you could make some
2 recommendation as to how to resolve that
3 problem for them to set up perhaps some sort
4 of a group that would have representatives
5 from all the different agencies and give them,
6 say, six months, because the data is all
7 wrong, and give them six months to come to
8 some conclusion, and then have the Chairman,
9 who is outside that group, say this is the way
10 it's going to be. Of course, you have to
11 observe all the procedural things.

12 This is an example of that which
13 is outside of the realm we are talking now,
14 but on a similar problem. That is, as you
15 know, in Tennessee, we have just had terrible
16 floods. And the question is, how do you
17 predict what the floods will be in the future?
18 Of course, it's a question of models, and all
19 these models give you a different result.

20 So, what they did is they got all
21 of the agencies involved, and they all spoke
22 as to why they were using the model they did

1 and the advantages or the disadvantages.
2 Then, the Director of that Division
3 responsible for it says, "Okay, I've heard the
4 results. We're going to use this one. We
5 know it's not perfect, but at least we'll all
6 know we're talking about the same thing." And
7 I think that's the only solution that I think
8 would make sense to me.

9 CO-CHAIR LASH: John?

10 MEMBER ROWE: Your points about
11 being proportionate to what we might know how
12 to do seem very powerful to me. Would I draw
13 from that the conclusion that one of your
14 first criteria for a solution would be that
15 the waste remains retrieval in some form for
16 the century period you are talking about?

17 DR. PARKER: I may have implied
18 that, but if so, it was not what I meant. In
19 fact, I'm actually opposed to retrievability
20 because at the time we did this system, we
21 tried to pick the best site and the best
22 method we knew how. If we have not learned a

1 lot during that 100-year time period, then
2 taking it out, what are we going to do with
3 it? We are going to expose people taking it
4 out, and we have no place specifically to put
5 it. So, unless there's some major
6 breakthroughs that we know in a better way
7 what to do with that, then I would be opposed
8 to retrievability.

9 And I should say the people from
10 the Nuclear Energy Agency asked me this same
11 question. So, I reread the "Rethinking"
12 report. There are about seven or eight places
13 in the "Rethinking" we talk about remediation
14 and only one place we say, basically, under
15 dire circumstances we should retrieve it. So,
16 I don't think I have changed my position, my
17 views on it over time.

18 CO-CHAIR LASH: Any further
19 questions?

20 (No response.)

21 Dr. Parker, thank you very much.
22 That was enormously helpful, and we appreciate

1 your willingness to join us.

2 Our next witness is an old friend
3 and someone whom I have admired for many
4 years. She spent a long career in public
5 service in Canada and the international arena
6 working on issues ranging from human rights to
7 the environment.

8 She and I met when she was on her
9 way to an extraordinarily challenging new
10 assignment to become the Director General of
11 the United Nations Environment Program
12 immediately after the Rio Earth Summit.

13 She spent five years there making
14 huge progress, making what had been a
15 sometimes dysfunctional agency effective, and
16 returned to Canada, I suspect, thinking that
17 she deserved a rest, but was soon chosen to
18 become the first President of the Nuclear
19 Waste Management Organization set up by Canada
20 when Canada was in a position similar to ours.
21 They had a run process attempting to create an
22 effective waste disposal system which had

1 failed.

2 Per Peterson sent around to a
3 number of us the report that came out of the
4 first few years of the Commission's work. And
5 as I told Dr. Dowdeswell, I found it a
6 description of the best public process I had
7 ever seen.

8 So, thank you very much for
9 agreeing to come join us.

10 MS. DOWDESWELL: Thank you very
11 much, Jonathan, and good afternoon, everyone.

12 I thank you for this invitation to
13 take part in a task that is so vitally
14 important. Your invitation actually caused me
15 to reflect a little about the challenges, but
16 also the huge satisfaction of the early years
17 of being with NWMO, working on such a
18 quintessential public policy challenge like no
19 other. So, I hope that all of you will not
20 only have great success, but that you will
21 come to learn something through the experience
22 and enjoy it as well.

1 The NWMO was established in -- oh,
2 I should say, first of all, that I am no
3 longer with the NWMO. I have not been for a
4 couple of years. So, I'm not speaking for
5 them, but I thought what might be of interest
6 is just to share with you some thoughts about
7 what was in the back of our minds as we went
8 through this entire process of trying to get
9 a government decision.

10 The NWMO was established in late
11 2002 in response to federal legislation. That
12 legislation required Canada's nuclear energy
13 corporations to create an organization to
14 investigate and develop an approach for the
15 long-term management of used nuclear fuel.

16 It's important to note that that
17 decision and that legislation followed a very
18 lengthy and extensive environmental assessment
19 of geological disposal that had occurred
20 during the nineties. In fact, it is still
21 known as the longest environmental assessment
22 process that ever took place.

1 That assessment process concluded
2 that, while the concept of geological disposal
3 had been adequately demonstrated from a
4 technical perspective, from a social
5 perspective it had not. It lacked the
6 required level of public acceptability to
7 actually be adopted.

8 So, when we started, we started by
9 asking, well, what would make our attempt,
10 this new attempt, any different than those of
11 the past? And we concluded that the answer
12 might lie in a search to understand the
13 deeply-held values of citizens, and to then
14 review the options through a multidimensional
15 lens that was in part shaped by citizens
16 themselves.

17 Obviously, it was a journey of
18 discovery. We learned much about
19 technological innovation and best practices,
20 but it was also a journey of discovery about
21 the nature of the society in which we are
22 currently living.

1 So, I want to spend a few minutes
2 talking about our underlying philosophy, our
3 underlying thinking, that flavored everything
4 that we then did, and I'm very proud to say
5 continues to be the bedrock of the work that
6 is going on now.

7 We believed that fundamentally the
8 selection of an approach for long-term
9 management was really about developing a
10 contract between science and society, a
11 contract that would allow all of us to
12 continue to benefit from technology, but also
13 would mitigate risk and, most importantly,
14 would respect the values of our citizens.

15 The conceptual underpinning, I'm
16 pleased to note, was actually sustainable
17 development. In developing collaboratively
18 with Canadians this approach, we said it had
19 to be socially-acceptable, technically-sound,
20 environmentally-responsible, and economically-
21 feasible.

22 But during the course of our work,

1 we were often asked why we thought it was even
2 necessary to consider the ethical and the
3 social aspects of nuclear waste management at
4 all, the implication being, of course, that we
5 simply must seek the safe technical approach,
6 and that was all we needed to do.

7 Well, the simplest answer for us
8 was that members of the public had a right to
9 be engaged in discussion about matters that
10 affect their lives fundamentally. But it
11 wasn't just a matter of recognizing rights,
12 it's also about better decisionmaking. People
13 who are affected by policies bring special
14 insights and expertise, and policies and
15 decisions that are developed in an environment
16 of trust and confidence have a much greater
17 likelihood of being supported and the outcomes
18 sustained.

19 We understood that technical and
20 scientific specialists could articulate, and
21 would articulate, the nature of the risk and
22 help us understand the technical adequacy of

1 each of the approaches available, but we
2 actually believed that the analysis of
3 scientific and technical evidence, while
4 essential, could not be the sole determining
5 factor in our decision. Ultimately, it is
6 society at large that will decide which risks
7 it is prepared to accept, and we needed, we
8 felt, to obtain a social license in order to
9 proceed. So, values and ethics mattered a
10 great deal.

11 We were also profoundly influenced
12 by the time dimension, of course, of this
13 issue. Effectively being asked to develop
14 public policy for a period of time longer than
15 recorded history is, at best, just a little
16 bit humbling.

17 The way in which we went about the
18 study, then, was to take two parallel, but
19 intertwining paths. The first was
20 synthesizing the views and aspirations of
21 citizens, and the second was examining with
22 rigor the technical and the engineering and

1 scientific information.

2 The engagement process was an
3 iterative process. It had four phases, each
4 with its own milestone document, and after
5 each we went back to the public and said, "Is
6 this what you told us? Here's what we're
7 doing."

8 It was to make transparent our
9 deliberations, to elicit public feedback, to
10 then shape the next stage of the study, and to
11 actually test and validate our own
12 observations and conclusions as we developed
13 them.

14 So, the first one was very simply
15 entitled, "Conversations about Expectations".
16 And it was the result of 200 personal
17 conversations that I had across the country.

18 It then said from that, are we
19 asking the right questions? Which was the
20 next document. And again, it was going back
21 to people. I could actually at the end of the
22 exercise point to a man in Newfoundland and

1 say, "This came from what you told me in the
2 out-port of Newfoundland." And we continued
3 to go back time and again to people.

4 So, our approach was
5 collaborative. We believed that if our
6 primary objective was to develop social
7 acceptable, it would only come through genuine
8 dialog, and always we sought to bring multiple
9 perspectives to the table to shape each
10 decision point. In other words, we didn't
11 provide opportunities for those who wanted a
12 soapbox to stand up and have their soapbox.
13 What we wanted was people coming who had to
14 listen to the other, to the alternate point of
15 view.

16 So, we experimented with a broad
17 range of engagement and dialog initiatives,
18 formal, informal, in-person, electronically.
19 It was an issue that demanded engagement, not
20 just participation; dialog, not just debate,
21 and thoughtful deliberation, not just
22 consultation.

1 There's not time to elaborate on
2 the dozens of exercises that we undertook, but
3 I mention things like a continuing roundtable
4 of ethicists which guided us throughout, a
5 national citizens' deliberative dialog
6 throughout Canada on values, a program of
7 aboriginal dialogs that were designed,
8 conducted, and reported on by aboriginal
9 peoples themselves, and, of course, the
10 inevitable scenarios exercise.

11 We estimate that we involved well
12 over 18,000 people in the deliberations,
13 including at least 400 specialists and
14 experts, and that's not counting the 50,000 or
15 more that actually interacted with us via the
16 website.

17 In parallel, the organization was
18 conducting the necessary scientific and
19 technical analysis of the approaches. We were
20 required, by the way, to examine three
21 technical methods: deep geological disposal
22 in the Canadian shield, centralized storage

1 above or below ground, and storage at the
2 nuclear reactor sites. What we found was that
3 each one had strengths and limitations.

4 This work was advanced through the
5 contributions of a multidisciplinary
6 assessment team. So, we had the physicists
7 sitting next to the ethicists throughout this
8 entire analysis that was going on.

9 What differentiated the exercise,
10 I think, from many others was that it actually
11 started from the issues that were raised by
12 Canadians. It didn't start from the science.

13 So, the framework included
14 objectives of fairness, health, safety,
15 security, community, well-being, environmental
16 integrity, economic viability, and
17 adaptability.

18 Once that assessment had been
19 undertaken, it was then tested and enhanced by
20 an additional comparative assessment of costs,
21 benefits, and risks.

22 The important thing about these

1 two intertwining, intersecting approaches was
2 that this dialog and this struggle, if you
3 like, to look at not only the complexities,
4 but the inevitable tradeoffs actually did
5 allow ordinary citizens and the specialists to
6 have common ground emerge.

7 And there were four areas of
8 common ground. One was that, almost without
9 exception, Canadians said that they are
10 prepared to assume responsibility now in this
11 generation for the waste they created. They
12 said it was simply not acceptable to leave it
13 as a legacy for the future.

14 Secondly, they said that any
15 approach had to be fair in the distribution of
16 costs, benefits, and responsibilities within
17 generations, but also across generations.

18 Thirdly, they were absolutely
19 clear that safety and security were
20 preeminent.

21 And fourthly, they said that they
22 wanted us to recommend an approach that was

1 adaptable. They wanted an approach to be
2 flexible, to allow succeeding generations to
3 make improvements based on either new
4 knowledge or changing societal priorities.

5 And it was on that common ground
6 that we said none of the three options that we
7 were asked to look at was the right one, and
8 we came up with our own that we called
9 adaptive phased management.

10 If I can just take another couple
11 of minutes?

12 CO-CHAIR LASH: Please.

13 MS. DOWDESWELL: Adaptive phased
14 management is really both a technical method
15 and a management system. That's very
16 important. It may sound simplistic to say it,
17 but it really was quite different than all the
18 technical methods we looked at.

19 The technical method is isolation
20 and containment of the waste underground in a
21 central location, in a suitable rock
22 formation. Crystalline rock of the Canadian

1 shield, of course, was top of the list or
2 Ordovician sedimentary rock, as long as you
3 don't ask me to explain what that is.

4 And part of the technical method
5 was that the waste would be monitored
6 continuously and it would be retrieved, if
7 necessary, for many years into the future.
8 That was a key requirement of the acceptance
9 of Canadians. They did not trust something
10 that wasn't continuously monitored or that
11 could not be retrieved.

12 But it is really the second
13 element of the approach, the management
14 system, that was most responsive to citizens
15 and kept them all at the table. The key
16 characteristic is that the approach is phased
17 with explicit decisions points along the way
18 to be able to adapt to social learning and
19 technological innovation. It's collaborative
20 decisionmaking with a legitimate role for
21 citizens, providing the capacity for knowledge
22 to be transferred from one generation to

1 another. The system is designed to build
2 confidence in the technology, in the
3 management method, and in the supporting
4 systems.

5 So, while we identified the
6 endpoint, we were not and could not be
7 prescriptive about how and when we would reach
8 that point. The actual choices belong to the
9 societies that will be affected when they are
10 affected.

11 So, in short, the case we
12 presented to government was that adaptive
13 phased management was both responsive and
14 responsible. Our report was submitted early,
15 on November 15th, 2005, and the government
16 accepted in totality the recommendations that
17 we made.

18 Now what next? The hard part has
19 just begun. We know that the success of any
20 management approach, no matter how well-
21 conceived, ultimately depends on how well it's
22 executed. And certainly matters of

1 implementation were front and center in the
2 minds of people we encountered. Calls for
3 strong governance, extensive oversight, clear
4 accountability, and greater and continued
5 opportunity for citizen engagement.

6 Ours, too, was not an exercise
7 about siting, but we did make two commitments
8 in the report. That was because it was,
9 again, front and center in the minds of
10 citizens. We made two commitments that
11 resonated with what we heard.

12 One was that we would only seek an
13 informed and willing host community, and the
14 second was that the process would start,
15 because of reasons of fairness, would start in
16 those four provinces involved in the nuclear
17 fuel cycle right now.

18 The process of site selection is
19 now underway, building on the same
20 collaborative approach that we fostered,
21 meaning that there is intended to be sustained
22 engagement with people and communities,

1 whether they welcome, oppose, or seek
2 modifications to our observations and
3 conclusions.

4 I present these thoughts today
5 certainly not because it is a blueprint to
6 follow. In fact, I feel very odd being the
7 only Canadian in the room today. But I do it
8 because I think it illustrates an approach
9 that deliberately sought to strike a bargain
10 between science and society.

11 There were two assumptions that
12 guided us. The first was the absolute
13 importance of discerning and understanding the
14 values of Canadians, and the second was the
15 wisdom of a holistic systems approach to any
16 analysis that we undertook.

17 During the study, I became
18 profoundly aware of the imperative to earn and
19 retain the trust of Canadians. There is no
20 reservoir of trust or confidence at this time,
21 and the public is simply not prepared to
22 delegate decisionmaking responsibility to any

1 one expert or specialist group, including the
2 government.

3 And on this issue, I would suggest
4 that history has shown us that no agency,
5 public or private, has adequately understood
6 and considered the breadth of objectives that
7 are important to citizens on this subject,
8 from economic feasibility to safety, security,
9 and fairness.

10 We humbly acknowledge that there
11 would always be some uncertainties. In fact,
12 it would be sheer hubris to think that we
13 could anticipate new knowledge and societal
14 change over hundreds of thousands of years.
15 So, we know that the future will undoubtedly
16 unfold in ways that may well redirect NWMO on
17 its path. After all, that's what adaptive
18 management is all about. But we were
19 confident enough to take the first steps.

20 Thanks very much.

21 CO-CHAIR LASH: Thanks very much.

22 Questions? We have a few moments.

1 We have some time with Liz later in the day
2 over dinner. But Susan?

3 MEMBER EISENHOWER: Just a quick
4 data point. How long did this process take
5 from start to finish?

6 MS. DOWDESWELL: The legislation
7 required that it be done in three years, and
8 it was done in two years and 11 months.

9 (Laughter.)

10 MEMBER MacFARLANE: Can you just
11 clarify what the NWMO is? Is it solely --

12 MS. DOWDESWELL: It's an
13 independent corporation. It has on its Board
14 of Directors representatives from each of the
15 nuclear producers.

16 MEMBER MacFARLANE: Okay.

17 MS. DOWDESWELL: But it is an
18 independent corporation. It has, after the
19 study phase, it has moved to actually take
20 over some other waste management
21 responsibilities that the largest member
22 corporation had, Ontario Power Generation, but

1 it is still an independent corporation,
2 totally funded by the nuclear waste
3 corporations. There's no government money in
4 it at all.

5 MEMBER MacFARLANE: And are there
6 government representatives on the Board?

7 MS. DOWDESWELL: No.

8 MEMBER MacFARLANE: No? Okay.

9 MS. DOWDESWELL: No.

10 MEMBER MacFARLANE: So, who
11 selects the Board members?

12 MS. DOWDESWELL: The members of
13 the three corporations themselves.

14 MEMBER MacFARLANE: Okay.

15 CO-CHAIR LASH: What kind of
16 government oversight is there?

17 MS. DOWDESWELL: We have, I think,
18 a rather extensive government oversight in
19 Canada through the Canadian Nuclear Safety
20 Commission. Both the Canadian Nuclear Safety
21 Commission and the Department of Energy, our
22 Department of Natural Resources, monitored our

1 work very closely all the way along.

2 We are also required by law to
3 submit annual reports to Parliament, not to
4 government, but to Parliament. We are also
5 required to submit regularly, and we did try
6 and do in advance, submit regularly to the
7 CNSC as required. And certainly all of the
8 rules and strictures will come into play
9 around any project, once we get going on it.

10 CO-CHAIR LASH: John?

11 MEMBER ROWE: I would like to go
12 back to the question you may have heard me ask
13 Dr. Parker, which is this point about, do you
14 do the best you can and put it away
15 permanently? Or do you try to do something
16 that is retrievable?

17 I would think your adaptive
18 approach would have said let's put it in a
19 place that could become permanent, but let's
20 keep it retrievable for a relatively long time
21 in case we have either misread the technology
22 or misread the social decisionmaking of the

1 future. Am I reading that right?

2 MS. DOWDESWELL: You got it dead-
3 on. I mean people said to us, you know, we
4 didn't even know the kind of ICT that we were
5 going to have 20 years ago, certainly not 30
6 years ago. You're talking about hundreds of
7 thousands of years. What on earth makes you
8 think that there are not going to be new
9 technologies, new developments?

10 I mean, when we were making the
11 case for the funding formula, for example,
12 someone said to me, why do you think there's
13 going to be a bank 100 years from now, for
14 heaven's sake? You know, so it really
15 questioned all of our fundamental assumptions
16 because of that focus on the timeframe.

17 But you're absolutely right,
18 retrievability and continuous monitoring were
19 just the public would not move off that,
20 regardless of what the science said.

21 CO-CHAIR LASH: Senator?

22 CO-CHAIR HAGEL: Thank you very

1 much.

2 MS. DOWDESWELL: You're welcome.

3 CO-CHAIR HAGEL: Is my microphone
4 on?

5 I wanted to focus a little bit on
6 the architecture, not so much on your report.
7 I want to focus a little bit on the structure,
8 the architecture, not so much the holistic
9 approach that you took, because that,
10 obviously, developed a certain amount of
11 social confidence, credibility, and trust,
12 which we heard an awful lot about this morning
13 that we don't have here in this country, for
14 a lot of reasons. Big government,
15 concentrations of power, so on and so on.

16 So, I would like you to comment on
17 that, if that was part of why you, in your
18 words, took that holistic approach, aside from
19 the science and all the rest of the factors
20 that you had to have to come up with an
21 intelligent report.

22 But I want to also ask this

1 question about the current Canadian
2 Government's oversight responsibilities. As
3 you know, in the United States we have an
4 Interior Department, which is getting an awful
5 lot of attention these days because of what's
6 going on in the Gulf of Mexico: licensing,
7 standards, and so on, regard drilling. Then,
8 we have a Department of Energy, which has the
9 nuclear piece or a certain significant
10 component of that.

11 My question is, the Canadians, do
12 they have -- and it kind of cuts to the
13 holistic approach you took -- is the Canadian
14 Government structured so that one department,
15 one agency, one oversight mechanism handles
16 all of the energy compliance in Canada or is
17 it sorted out?

18 MS. DOWDESWELL: We're not that
19 smart.

20 (Laughter.)

21 The provinces have the
22 responsibility for deciding what energy supply

1 mix they are going to entail. So, that is
2 where the decision starts. Whether or not
3 they are going to get involved in nuclear, et
4 cetera, is really in the hands of the
5 provinces.

6 The federal government has
7 responsibility for nuclear waste management.
8 For some reason, someone years ago decided
9 that was just too important to leave to a
10 hodgepodge across several provinces. So, it
11 is only the Canadian Nuclear Safety Commission
12 that has responsibility at the federal level.

13 The department of government, the
14 two departments that have any responsibility
15 for following the issue are the Department of
16 the Environment through its Canadian
17 Environmental Assessment Act and the Ministry
18 of Natural Resources. But, ultimately, it is
19 the Canadian Nuclear Safety Commission that
20 says yes or no. That's where you get the
21 license from. That's who follows on a project
22 basis.

1 I would say that the minister
2 through whom the corporation deals with
3 Parliament is the Minister of Natural
4 Resources. So, it's clear in that there's one
5 agency that has the responsibility for
6 licensing, period.

7 CO-CHAIR HAGEL: Uh-hum. Thank
8 you.

9 Back to the holistic approach that
10 you noted, you mentioned that you had the
11 physicists sitting next to the --

12 MS. DOWDESWELL: Ethicists.

13 CO-CHAIR HAGEL: The who?

14 MS. DOWDESWELL: Ethicists.

15 CO-CHAIR HAGEL: The ethicists.

16 And you alluded to other examples of the
17 makeup of the team. Take us through that a
18 little bit more on, was that partly the intent
19 when you began it and structured it that way,
20 to build that kind of confidence? It was a
21 very deliberate focus?

22 MS. DOWDESWELL: What was

1 fundamental to everything we did was
2 understanding that we would not achieve the
3 answer we wanted if we only looked at the
4 technical. So that at every turning point the
5 technical had to be subject to the questions
6 and concerns that were raised from an
7 environmental and economic, an ethical
8 perspective.

9 We thought, given the time, that
10 the most efficient way to do this was to
11 actually choose eight people whom I managed to
12 convince to take one week, an entire week,
13 once a month for six months and come to my
14 office, and they worked from morning until
15 night for an entire week, did some work in
16 between, but actually went through the entire
17 multivariate analysis. That is one word that
18 does come back to me. But they also learned
19 from each other.

20 And if you want any direct insight
21 into that, one of those eight people around
22 the table was, indeed, Tom Isaacs. So, he can

1 attest to the number of times the technical
2 people would say, "What on earth is that woman
3 talking about?" I mean it was, you know, I
4 would like to be able to tell you that there
5 was a grand design. Much of it was just
6 common sense. It was just day-to-day common
7 sense, but based on an ethical framework.

8 The very first week of the
9 Corporation, the very first thing that we did
10 as a staff was to decided what our values were
11 going to be. And if you notice, in any of our
12 publications that statement of values is on
13 the front cover.

14 And we decided that we would not
15 achieve anything unless we had integrity, if
16 we could not demonstrate to the Canadian
17 people that we actually delivered what we
18 promised we would do at every turn.

19 CO-CHAIR HAGEL: Okay.

20 CO-CHAIR LASH: Per, did you have
21 a question?

22 MEMBER PETERSON: Liz, I want to

1 thank you. It's a pleasure to have the
2 opportunity to meet you.

3 Tom Isaacs directed me to the NWMO
4 report, and I read it. What I found to be
5 particularly helpful, and I think is required
6 reading, is the discussion on the various
7 issues that were raised by citizens, the
8 things that you learned about what matters to
9 the people who are impacted by this, and both
10 the native, the indigenous populations and
11 also the remainder of citizens. That is very
12 helpful to provide some perspective on what
13 the goals are.

14 Now, then, this leads to one
15 specific feature which I found is interesting
16 in where you ended up. I think the first
17 thing is you had mentioned that the Canadian
18 situation in some respects is different from
19 the U.S. situation. Just for the record, I
20 think it is important for people to be
21 knowledgeable.

22 The types of reactors that were

1 developed in Canada are very different from
2 those that are used here in the United States.
3 Because they use heavy water, they can operate
4 with natural uranium. Therefore, the volumes
5 of used fuel that are generated are
6 substantially larger and the amounts of
7 fission products and actinides are much more
8 dilute. So, the economics of reprocessing
9 would be very, very questionable.

10 But I found it interesting still
11 that you concluded that you didn't want a
12 system, that the best system was not one that
13 was just a repository or just centralized
14 storage or just onsite storage, but, instead,
15 some capacity to implement all of those.

16 This leads to a larger question
17 of, to what extent is it beneficial, do you
18 think, to have some diversity in your
19 management technologies or capabilities,
20 particularly for the United States where we
21 have a much larger amount of material and it
22 is much more heterogenous than what you have

1 in Canada?

2 MS. DOWDESWELL: Well, I'm
3 certainly not the technical expert at all.
4 The looking at the mix of the three options,
5 and then marrying it with a management
6 approach, was absolutely driven by what people
7 told us. We didn't have a preconceived notion
8 of where we would end up, although certainly
9 the engineers and the physicists thought they
10 knew because it had been studied for 10 years
11 and, after all, the rest of the world was
12 doing geological disposal.

13 I think if you look in most of our
14 reports, you will find that, unless we are
15 referring to legislation, you will not find
16 the word "disposal" used. One of the things
17 that is intriguing that I wish someone would
18 do is a lesson in linguistics coming out of
19 the exercise.

20 Essentially, the Canadian people,
21 I use that as a generalization, but people
22 told us they didn't believe disposal, they

1 didn't believe that you could, nor did they
2 want you to just put it in a hole in the
3 ground and forget about it. Disposal to them
4 meant getting rid of it for all time, and they
5 knew that wasn't possible. So, we didn't use
6 the word "disposal". We talk about isolation
7 and containment.

8 But to your question, Senator
9 Hagel, the two countries are not that
10 different in the situation of disrespect for,
11 lack of confidence in the nuclear industry
12 itself and certainly government itself. So,
13 we faced exactly the same situation that you
14 are talking about.

15 CO-CHAIR LASH: And just to follow
16 up on that, that begs the question of how you
17 build credibility with a group owned and
18 operated by the nuclear industry. I mean this
19 Commission has been criticized as
20 insufficiently representative, but it is
21 certainly entirely independent. But you must
22 have gotten a lot of early criticism because

1 of who you were.

2 MS. DOWDESWELL: Yes, we continued
3 through the entire time to get criticism about
4 our Board of Directors. But people knew that
5 the world of nuclear energy was not where I
6 came from. And I guess my standard response
7 to them was, "We don't have time to worry
8 about that at this stage. Join us.
9 Participate. Work with us, and then judge us
10 at the end of the day. I just don't have time
11 to spend a lot of my energy wasted talking
12 about whether or not our Board of Directors is
13 correctly constituted for this purpose."

14 Because, ultimately, my Board of
15 Directors left me alone, and they supported me
16 at times when they needed to. They performed
17 their financial due diligence, and they
18 certainly signed off on the report at the end,
19 but on a day-to-day basis I couldn't have
20 wished for a more respectful Board to work
21 with.

22 CO-CHAIR LASH: Any other

1 questions?

2 (No response.)

3 Liz, thank you very, very much for
4 joining us. That was great.

5 So, our last witness this
6 afternoon is Dr. Dan Metlay, Senior
7 Professional Staff Member at the Nuclear Waste
8 Technical Review Board, which provides
9 independent scientific and technical oversight
10 of the Department of Energy's program for
11 managing and disposing of high-level waste and
12 spent fuel. He will provide us with an
13 overview of international repository siting
14 experience.

15 Dr. Metlay, I noticed earlier
16 Allison pulling out your report in order to
17 challenge an earlier speaker. It was
18 enormously useful, and thank you for joining
19 us.

20 DR. METLAY: Thank you very much,
21 Mr. Chairman, for the kind words.

22 I'm Dan Metlay. For more years

1 than I care to remember, I have been involved
2 in nuclear waste issues, first, as an academic
3 and now as a government official. I am
4 currently a member of the Senior Professional
5 Staff of the Nuclear Waste Technical Review
6 Board. And on behalf of the Board, I would
7 like to thank the Commission for its
8 invitation to appear today.

9 In the audience is one of our
10 long-time Board members, Dr. Mark Abkowitz,
11 who is in his day job a professor of
12 engineering at Vanderbilt University.

13 In my presentation, I would like
14 to address the three questions that the
15 Commission posed in its letter of invitation.
16 Some of these questions other people have
17 touched upon, especially Chris Whipple this
18 morning. But let me just review what the
19 questions are.

20 First, is a disposal facility or
21 facilities needed under all foreseeable
22 circumstances? And two, if so, what

1 alternative approaches are there for disposal?

2 And third, what should a disposal system

3 development process look like?

4 I'm going to answer those
5 questions based on the report that I guess
6 Allison had already referred to, and my
7 Chairman has encouraged me to say a couple of
8 words just on some personal observations. But
9 most of what follows is based and an
10 enlargement of what is in that report.

11 But before I go any further, could
12 I have the next slide?

13 I suspect there are some people on
14 this panel who are not familiar with the
15 Nuclear Waste Technical Review Board, and I
16 need to say just a few words about that.

17 First of all, the Board is an
18 independent federal agency. We are one of the
19 smallest ones. We were set up under the 1987
20 Nuclear Waste Policy Amendments Act, and our
21 job is essentially real-time peer review of
22 the activities undertaken by the Secretary to

1 implement the Nuclear Waste Policy Act.

2 Quite simply put, although there's
3 some misconceptions in this area, we are not
4 a Yucca Mountain Board; rather, we are a
5 Nuclear Waste Policy Act Board. And as long
6 as the Department of Energy has legal
7 responsibility for managing spent fuel and
8 high-level waste, and as long as that
9 responsibility involves something technical,
10 the Board's charter will remain as it always
11 has been.

12 There are 11 Board members. They
13 are nominated by the National Academy of
14 Sciences and appointed by the President. Our
15 current Chairman is Dr. John Garrick, who is
16 a member of the National Academy of
17 Engineering, and sort of an inventor of
18 probabilistic risk analysis.

19 Next slide, please.

20 As I said, I'm going to be talking
21 mostly from the report that the Board
22 published in October. I would like to say a

1 few words about the origins of that report.

2 Board staff and Board members met
3 with Members of Congress and congressional
4 staff last spring. And one of the points that
5 was made fairly consistently to us was that
6 there was a lot of references made to various
7 international programs, and it seemed as if
8 those references could be self-serving. So,
9 they were looking for sort of an independent,
10 non-partisan, disinterested assessment of what
11 was going on internationally. That was the
12 origins of this report.

13 And I'm happy to say that, because
14 of the report, we are now going to be
15 publishing in approximately two or three
16 months an expansion of this report, which will
17 provide more context about the technical and
18 the process aspects of these international
19 programs.

20 If I had to sum up my presentation
21 in one word, the word would be "variety".
22 There's a lot of cross-national variety that

1 stems from different problem-solving
2 definitions, different political cultures,
3 different constraints on indigenous geology,
4 and different assessments about how
5 expeditiously a long-term waste management
6 program needs to move forward.

7 Let me have the next slide. And
8 what I have tried to do is sort of suggest the
9 first question. And here the answer to the
10 first question that the Commission posed is
11 clearly yes. I think Chris Whipple set forth
12 the correct view this morning. There's no
13 compelling technical or public health need to
14 move now, but, clearly, different countries
15 have taken different views about how quickly
16 one should move forward.

17 In the first category, you sort of
18 find the sort of early movers: the U.S. with
19 respect to Yucca Mountain and WIPP, Sweden,
20 Finland, and France. Sort of in the next
21 category of countries are nations that have
22 made commitments to operate a repository by

1 mid-century. Then you have another group of
2 countries whose path forward is largely going
3 to be determined by the outcome of a voluntary
4 process.

5 And finally, and this I think is
6 actually important to note, there are actually
7 two countries that have said we are not
8 convinced about developing a repository.
9 Spain is one of them, and I guess if you call
10 Scotland a country, Scotland has also demurred
11 from the position taken by England and Wales
12 to develop a repository.

13 The next slide, please.

14 It is clear that there is also a
15 wide variety of waste forms that people
16 believe can be disposed of effectively in a
17 deep geologic repository. What I have tried
18 to do is sort of list the various forms
19 associated with various countries. These
20 represent the set of waste forms that each
21 country believes can be and should be disposed
22 of in a deep geologic repository.

1 The next slide, please.

2 Another way of looking at the
3 Commission's first question is to ask, how did
4 the choice of a repository come about? And
5 there are two sort of paths that countries
6 have adopted.

7 The first was essentially to say
8 we think geologic disposal is a good idea.
9 There seems to be fairly strong international
10 consensus amongst the scientific community,
11 and we're going to do it. And in that group
12 was the United States early, but it is still
13 true for Belgium today, as it is for China,
14 and it is for France, I mean for Finland, and
15 for several other countries. Essentially, it
16 was an implicit acceptance of the logic of
17 geologic disposal.

18 On the other hand, there are other
19 countries that have made an explicit formal
20 comparison between geologic disposal and other
21 waste management alternatives. The United
22 States did that in 1980 as part of its generic

1 Environmental Impact Statement. The previous
2 speaker eloquently talked about the process
3 that the Canadians have recently gone through.
4 The British have just concluded a process
5 called managing radioactive waste safely, and
6 the French also engaged in sort of a
7 deliberative comparative process.

8 I make this observation because
9 it's actually not merely an academic one. The
10 Swedes, whose program has been referred to
11 many times today, have run into an interesting
12 situation. When their program started several
13 decades ago, they only had to go through a
14 single-stage regulatory process through what
15 was then known as the SKI. Within the last
16 decade, however, the European Union has
17 legislated environmental impact assessment
18 rules. In Sweden now it has become a two-
19 stage process in which the implementer, SKB,
20 has to defend its method in front of an
21 environmental court.

22 The next slide, please.

1 There are alternative approaches.
2 I want to talk about them in terms of both the
3 technical and the non-technical filters. I
4 want to focus mainly on the site selection
5 process.

6 Next slide,

7 Basically, there are two ways
8 countries have approached a technical filter
9 for selecting sites. One has been very host-
10 rock-oriented. We have heard earlier today
11 the discussion about how salt dominated the
12 thinking, at least in the early years of this
13 country. In Belgium, they have focused solely
14 on Boom Clay.

15 In contrast to that, countries
16 like Canada, countries like the United
17 Kingdom, countries like a Japan have issued
18 sort of general qualifying and disqualifying
19 conditions. In the United States, we have
20 very, very prescriptive qualifying and
21 disqualifying conditions.

22 Next slide, please.

1 I want to talk a little bit about
2 the non-technical filter, and here I want to
3 focus specifically on the role of the local
4 community or the state and region in terms of
5 site selection.

6 Again, what you see is a very
7 large variety of different approaches adopted
8 by different countries. You can have a
9 voluntary approach, a local or state veto at
10 the end of the process, an informal regional
11 participatory approach, as the Swiss have
12 done, and you could have simply no decision
13 made by a number of countries.

14 Next slide.

15 The other thing that is important
16 to understand is that countries differ with
17 respect to how they make the final decision.
18 Some countries, such as the United States
19 early on, they approached this problem in a
20 serial way, essentially, looking at sites
21 until one popped up as being satisfactory.

22 The alternative way to do this,

1 and the one that was adopted in the Nuclear
2 Waste Policy Act, is to do it in a parallel
3 approach, a comparative approach. What you
4 see happening is that different countries do
5 different things. And particularly in the
6 countries that are depending on voluntary
7 sites, what approach they take, whether they
8 do serial or parallel, is going to be
9 determined simply by how many volunteers come
10 to the fore.

11 Next slide.

12 We have also heard discussions
13 about institutional form and the idea that,
14 should it be in DOE, should it be a private
15 corporation, should be a fed corp? Again, we
16 see a lot of variety.

17 In a number of countries, it is a
18 government agency. In other countries, it is
19 a government-owned corporation. In still
20 others, the utilities are responsible.

21 We have heard, especially in the
22 previous presentation, about the notion of

1 developing the process in a stepwise fashion.
2 I tend to be less of an enthusiast for this as
3 being a silver bullet that will solve all of
4 the problems. I wonder, to begin with, what
5 isn't a stepwise process. It seems to me that
6 the key things are, how large are the steps
7 and can you get agreement on what rules you
8 are going to have to move from step to
9 another?

10 This kind of a notion is based on
11 what is called an incremental process, and we
12 can go into this later on, if you are
13 interested. I simply am not convinced that
14 the conditions associated with developing a
15 repository are consistent and compatible with
16 a kind of an incremental process.

17 Finally, let me just quickly sum
18 up by referring to some of the personal
19 observations that my Chairman encouraged to
20 make.

21 The first one has to do with --
22 can I have the next slide, please? The first

1 one is pretty simpleminded. It says there are
2 no simple solutions to complex problems. I
3 don't want this to be interpreted as in any
4 way demeaning of people who have proposed some
5 of these solutions, but I think they fail to
6 reflect the complexity of doing a long-term
7 sociopolitical, technical project.

8 I think people focusing on
9 institutional form probably are overselling
10 the possibilities that would result by
11 changing institutional forms. The AMFM
12 report, which was done as Nuclear Waste Policy
13 Act, did a nice analysis of various forms.
14 I'm still not convinced that institutional
15 form is the key question here.

16 Another suggestion that is often
17 raised is a volunteer community. The Swedish
18 model works really, really well in Sweden. It
19 has yet to be successfully adopted in any
20 other country. And in fact, the one country
21 that is probably the furthest along in trying
22 to adopt the Swedish model is the Japanese,

1 who have been searching for a volunteer site
2 for the last eight years.

3 Finally, I would just recall a bit
4 of history, that in the 1970s a group like
5 this was put together by the Carter
6 Administration. It was called the Interagency
7 Review Group. It proposed the notion of
8 consultation and concurrence, which is
9 different than what is in the Nuclear Waste
10 Policy Act, which was consultation and
11 cooperation. And the Carter Administration
12 was criticized by, among other people,
13 governors of states for essentially offering
14 the state a veto power. So, when the
15 legislation was finally passed, the veto power
16 in an absolute sense was removed.

17 Finally, there is a connection,
18 and we have sort of been walking around this,
19 there is a connection between what we do with
20 waste and what we do with nuclear power.

21 Clearly, on the books in the United States we
22 have laws, such as in the State of California,

1 the State of Wisconsin, we have the Nuclear
2 Regulatory Commission talking about revising
3 its waste confidence rule. So, there is,
4 obviously, a legalistic connection.

5 I'm talking more about a
6 connection having to do with public
7 perceptions and motivations. It seems to me
8 that the public will never believe we have a
9 permanent solution unless there's real
10 concrete evidence for that.

11 And in that regard, I think it is
12 noteworthy to observe that outside of the
13 United States there's been a real concerted,
14 conscientious effort to divorce the motivation
15 for doing waste from the motivation either to
16 expand nuclear power as an energy source or as
17 to reduce it as an energy source.

18 With this, I conclude and will be
19 happy to try to answer any of your questions.

20 CO-CHAIR LASH: Thank you so much,
21 Dr. Metlay. Very clear and concise, and we
22 appreciate the personal observations as well

1 as the presentation of your report.

2 Questions? Comments?

3 Observations? Allison?

4 MEMBER MacFARLANE: Two countries
5 are notably absent, Russia and India.

6 DR. METLAY: Yes, yes.

7 MEMBER MacFARLANE: What can you
8 tell us about them?

9 DR. METLAY: Well, I can't tell
10 you a lot. And quite frankly, there are some
11 other countries that are also missing:

12 Hungary, the Ukraine. Both of them have --

13 MEMBER MacFARLANE: Taiwan.

14 DR. METLAY: Taiwan. Both of
15 them, all of them have non-trivial nuclear
16 power programs. The criteria for including
17 these countries were that I felt confident
18 that I could get information that was
19 credible. And in the cases of the countries
20 that were excluded, I didn't have that
21 confidence.

22 I neglected to mention -- and this

1 is actually an important point that I'm almost
2 embarrassed to admit I forgot -- this report
3 was reviewed by at least one and as many as
4 four people from each of the 13 countries.
5 And in an act of bravery, they agreed to allow
6 their names to be published at the front of
7 the report as reviewers. So, I have a fair
8 amount of confidence that the information
9 contained here was at least up-to-date as of
10 August of last year.

11 CO-CHAIR LASH: John?

12 MEMBER ROWE: What country is
13 closet to having evidence of a permanent
14 solution, to try to use your exact words? And
15 how far along is it really?

16 DR. METLAY: Well, I can tell you
17 what the official plans are. Clearly, the
18 three countries, now that the Yucca Mountain
19 Project has for at least the moment been
20 sidetracked, the three countries furthest
21 along are Sweden and Finland, which expect to
22 have an operating repository sometime in the

1 timeframe of 2020-2021. The Swedes plan to
2 submit their application to the SSM, which is
3 their new regulator, probably February or
4 March of next year.

5 The French have in December
6 selected a specific area near the community of
7 Bure where they are going to locate the
8 repository. They, under their law, expect to
9 submit a license application approximately in
10 the 2015 timeframe.

11 So, those are clearly by far the
12 leading countries. I'm not going to speculate
13 on how successful they are going to be.

14 CO-CHAIR HAGEL: Thank you.

15 If I recall, you noted that Spain
16 and I think Scotland have made decisions, or
17 maybe not made the absolute decision, not to
18 go forward with geologic repositories, is that
19 correct?

20 DR. METLAY: In Spain, there's the
21 presumption that there will be a repository,
22 but there has been no official government

1 determination that that is national policy.

2 Scotland is kind of interesting
3 because the United Kingdom several years ago
4 just completed a process which they call
5 managing radioactive waste safely. And it was
6 essentially a report prepared and sent to the
7 government, and eventually approved by the
8 government, but because nuclear waste issues
9 are a devolved power to Northern Ireland, to
10 Wales, to England, and to Scotland, the Scots
11 decided they would not sign onto the
12 commitment by the UK Government to develop a
13 repository.

14 CO-CHAIR HAGEL: So that's the
15 explanation as to why Scotland --

16 DR. METLAY: Yes. Yes, it doesn't
17 say that they are opposed. And certainly in
18 the case of Spain, all the unofficial signs,
19 tea leaves, point to the fact that they will
20 eventually develop a repository, but no
21 official position has been taken.

22 CO-CHAIR LASH: Per?

1 MEMBER PETERSON: Dan, this
2 morning I heard an interesting term that was
3 called "advocacy science," which sometimes can
4 be a problematic issue in complex technical
5 systems like the ones we are interested in
6 here.

7 The Nuclear Waste Technical Review
8 Board is an interesting organization because
9 it's independent of the regulatory
10 authorities. It is independent of the
11 implementing agency, the DOE. It is also the
12 membership is nominated by the National
13 Academy, but politically selected by the
14 President. So, it has a very special
15 structure.

16 How does this compare and contrast
17 to independent technical input for other
18 nuclear waste programs around the world? Is
19 the NWTRB unique or is it something that there
20 are similar organizations elsewhere?

21 DR. METLAY: I would like to say
22 we are unique, but we are not. In fact, I

1 just got back from a meeting in Sweden, which
2 the nuclear energy agency of the OECD
3 organized. It's a group called the Advisory
4 Bodies to Government, and it seems to be
5 growing every year. There are currently six
6 other countries, six countries including the
7 United States that have a Board-like
8 organization. Those countries are France,
9 Switzerland, Germany, the United Kingdom,
10 Sweden, and the United States.

11 Sweden's Board used to be known as
12 KASAM. It has a much broader charter than the
13 Nuclear Waste Technical Review Board. It gets
14 involved in policy, legal, regulatory, ethical
15 issues.

16 The same is true with the
17 corresponding Board in the United Kingdom, the
18 Committee on Radioactive Waste Management.

19 The other four Boards are purely
20 technical Boards, like the NWTRB. What is
21 interesting is that this organizational form
22 seems to be growing. We understand that the

1 Japanese are considering seriously creating a
2 Board-like structure. I would at least like
3 to think that the experience of the NWTRB has
4 in some small way contributed to the
5 visibility that this kind of approach has
6 gotten.

7 CO-CHAIR LASH: Vicky?

8 MEMBER BAILEY: Kind of a big-
9 think, I guess, question, I mean since you
10 have had the opportunity to probably witness
11 other committees and commissions, and you
12 mentioned the one in the seventies that came
13 up with a consultation and concurrence.

14 From the standpoint of lessons
15 learned or questions asked or questions maybe
16 that we haven't asked, we gave you, posed
17 three questions to you. Is there a question
18 that you might have wanted to answer that we
19 didn't ask? I guess I'm trying to take
20 advantage of your institutional knowledge here
21 while I have you here to help me, because this
22 is my first time to sit on such a Commission

1 and I have heard a lot about the others.

2 DR. METLAY: I'm not sure I can
3 answer that well, but I will at least make a
4 stab at an answer.

5 I think there's a false sense of
6 permanence that groups like this -- and I
7 happen to have had the privilege of working on
8 the Interagency Review Group in the Carter
9 Administration -- that groups like the one I
10 was on and the one you are, there's probably
11 a sense, and it's a false sense, of
12 permanence. You think you're doing your best
13 job. You think your recommendations make a
14 lot of sense. But there's a randomness in the
15 political world that will confound even the
16 best of intentions.

17 So, it seems to me one lesson that
18 should be learned is how one deals with the
19 inevitable transience of what you are going to
20 recommend. So, that would be one thing.

21 I know many of the ideas from the
22 IRG were incorporated into the Nuclear Waste

1 Policy Act, but five years later the
2 Amendments Act was passed, and many of the
3 basic ideas were essentially rendered
4 obsolete.

5 CO-CHAIR LASH: John?

6 MEMBER ROWE: Just an observation:
7 the sense of permanence would be a great sin.
8 Considering us all totally impotent would be
9 an even greater one.

10 (Laughter.)

11 DR. METLAY: Well, you know, quite
12 frankly, Mr. Rowe, coming from a Board with no
13 implementing or regulatory powers, we
14 understand the question of power and influence
15 very well.

16 CO-CHAIR LASH: Thanks very much,
17 Dr. Metlay. We appreciate your coming, and we
18 probably will call on you again in the future.

19 That ends our presentations for
20 this afternoon. We will move on to the public
21 participation section. We have a couple of
22 witnesses who have signed on to present.

1 Just before we do that, I would
2 like to ask if any of the Commissioners have
3 closing comments they would like to make at
4 the end of the day, before we move to the
5 public participation.

6 (No response.)

7 Well, let me at least say to all
8 of those -- oh, John?

9 MEMBER ROWE: I just have one. We
10 have spent much of the day, as we have at the
11 full Commission, hearing very powerful and
12 convincing and persuasive statements about the
13 need for public respect, public confidence,
14 public participation, all of which I accept in
15 total.

16 I think we should not forget that,
17 among those who feel betrayed by what's gone
18 on, is the industry itself, the people who may
19 be expected to invest in the next generation,
20 if it be American policy that there is to be
21 one.

22 And there's as much need for trust

1 that a process can be delivered upon in my
2 friend Mr. Ayers' constituencies or in mine as
3 there is in others. We have shattered trust
4 across the board here.

5 CO-CHAIR LASH: The point is well-
6 taken.

7 I just want to say to all of those
8 who came to speak to us today again how
9 grateful we are for your help as we move
10 forward with this task. We don't have even as
11 much time as the Canadian Government gave the
12 NWMO, but we intend to meet the challenge.
13 Over the coming months, we hope to be reaching
14 out to these same constituencies again and
15 again to ask you to help us think about these
16 questions.

17 I have two people listed who asked
18 to address us this afternoon: Brian O'Connell
19 and Steve Frishman.

20 Mr. O'Connell, are you here? Yes,
21 coming forward? Okay.

22 We will queue you up for five

1 minutes, Mr. O'Connell.

2 MR. O'CONNELL: Thank you.

3 I am Brian O'Connell. I am with
4 the National Association of Regulatory Utility
5 Commissioners, and you were kind enough to
6 invite us to speak more formally on the 25th
7 of May. And most of the focus was on -- oh,
8 I see someone has left their glasses here.

9 Most of the focus was on the
10 money, the ratepayers' money, as we refer to
11 it. But I went back through our testimony,
12 and I wanted to bring out a few of the points
13 that we didn't give as much emphasis on.

14 These are my observations after 11
15 years of tracking the program. I have been to
16 a lot of meetings and have read just about
17 every report that has come out, starting with
18 the radiation standard, 48 pages of The
19 Federal Register, very difficult reading to
20 even a graduate engineer.

21 Just a recap: we feel that Yucca
22 Mountain, of course, was the approved site in

1 2002, and we would like the license review to
2 continue. I couldn't go without saying that.

3 But if we were not going to
4 develop a repository or to develop another
5 site, it requires a change to the Nuclear
6 Waste Policy Act. I think we all know that.

7 And before starting over, I would
8 recommend that there be a review, and there
9 have been references to quite a bit of this
10 already, of the criteria, the search process,
11 the radiation standards, and the use of
12 incentives. And I have a few points in
13 particular.

14 I believe it's Title X, Part 960,
15 that is the general applicability for
16 repositories that's on the books and would
17 either do its job or be replaced by something
18 for a similar purpose.

19 Several people have mentioned, and
20 I'm certainly one of them, the idea of a one-
21 million-year standard for radiation just
22 boggles the mind. I think that should be

1 reviewed.

2 And as I understand the
3 difference, the National Academy's report
4 recommended a risk-based approach instead of
5 dose-based. So, I think that should be
6 reviewed again.

7 And as I understand it also,
8 Section 161 of the Act eliminates granite from
9 consideration. So, that has to be undone, if
10 that is going to be everything up for fair
11 game.

12 I was talking with Rod McCollum
13 about the retrievability requirements. My
14 opinion is that, certainly for the safety and
15 monitoring, that there is a retrievability
16 interest. But as for the question of whether
17 we are going to reprocess this valuable fuel
18 that we're throwing away, I think they are
19 going to be generating more future fuel from
20 the new plants that come along, so that we
21 don't have to go after this older fuel, but we
22 can write that off, if you will.

1 Certainly favor the transparency
2 and communications improvements that are
3 needed to gain public trust.

4 The idea of a multipurpose
5 canister, the so-called TAD should be
6 reviewed.

7 As to other organizational
8 alternatives besides DOE, noting Senator
9 Voinovich's bill, which is quite detailed, I
10 noticed it and I read it several times. I
11 think that the transfer of the unfunded asset
12 tells me that it's the \$24 billion stays where
13 it is. I think if we are going to have a new
14 entity to take a hold of this program, one
15 expression of sustainability and seriousness
16 is that some of the money gets returned, in
17 addition to the future fee revenue stream.

18 I have been impressed, and I heard
19 Dan's comments about the stepwise approach.
20 I think the report done by the National
21 Academy was excellent. It is not just about
22 the technical side. One of the features that

1 I like about it is that it calls for an
2 advisory council for stakeholders, which I
3 think we have heard a lot of interest in
4 having that be represented.

5 That sounds like five minutes are
6 up.

7 So, the big imponderable is, how
8 can we get a disposal strategy that endures
9 for the decades?

10 And my time is up, with the
11 exception of one minor point on cost estimates
12 for the repository are quite finite. We have
13 the most recent one, which said it was \$96
14 billion. That was for 122,000 tons, but we
15 don't really have a separate estimate for a
16 70,000-ton Yucca Mountain, as far as I know.
17 None was published.

18 And thank you very much for the
19 opportunity.

20 CO-CHAIR LASH: Thank you, Mr.
21 O'Connell.

22 If you have those additional

1 recommendations in writing, I know we would
2 welcome input from NARUC about the standards
3 issues, and so forth.

4 MR. O'CONNELL: Thank you very
5 much.

6 CO-CHAIR LASH: Yes.

7 MR. O'CONNELL: We will follow up
8 on that.

9 CO-CHAIR LASH: Is Mr. Frishman
10 here, Steve Frishman? Good.

11 Welcome, and thank you for joining
12 us this afternoon.

13 MR. FRISHMAN: Thank you, Mr.
14 Chairman, members.

15 My name is Steve Frishman, and
16 I've been a technical and policy consultant to
17 the State of Nevada since 1987. Before that,
18 I directed the oversight program for the State
19 of Texas. And before that, I was on a State
20 committee advising the Texas congressional
21 delegation on the 1982 Nuclear Waste Policy
22 Act. So, I will refrain from telling you

1 everything I know.

2 I did hear one question this
3 morning that I thought that I should probably
4 reemphasize to you. And that is, in the
5 course of my time with this program, I have
6 been involved in every iteration of the EPA
7 rule or EPA standard that we just heard its
8 latest iteration is maybe the most difficult
9 to get through.

10 And I've had a difficult time with
11 it in its changing in focus, changing in
12 concept, changing in implementation. And it
13 occurred to me, when Commissioner Rowe this
14 morning asked a question, what kind of safety
15 standard is acceptable to Americans on the
16 street, that questions was dodged around by a
17 lot of people today. It was never directly
18 put to anyone. But the issue of the
19 regulation was sort of mentioned on the way
20 through by a number of speakers today.

21 I think we have to, for your
22 purposes, together we have to come to some

1 kind of at least a rudimentary answer to
2 Commissioner Rowe's question because, as we
3 just heard, people think a million years is
4 ridiculous. And it is because they have no
5 concept of a million years, and it's not
6 demanded that they do have a concept of a
7 million years.

8 But I think we need to start with
9 a really simple answer to the question. That
10 is, aside from being duly protective
11 technically, which we all intend to one way or
12 another assure that happens, we need to
13 remember for the Americans in the street that
14 it has got to be understandable both
15 conceptually and in its implementation.

16 We have gone round and round with
17 EPA. I guess I can say that I understand what
18 they have done each time. I understand how
19 they intended it to be implemented each time.
20 And each time it seems to get farther and
21 farther from the simple idea that it has got
22 to be understandable.

1 Now I will give you an example
2 that may not be very palatable to some of you,
3 but it represents sort of the difference
4 between understandable and not understandable
5 to the person who says, "You've got to be
6 crazy to be talking about a million years."

7 This is at one point EPA suggested
8 that the post-closure standard for Yucca
9 Mountain be set at 100 millirems per year.
10 Now the American industry has little to think
11 about when they hear 100 millirems per year.
12 What they hear is the common talk that says,
13 well, background is about 400, so what's 100?
14 Well, first of all, it's 100 more. So, that
15 makes a difference. But that is the only
16 context they hear. But then, if you start
17 looking into what that average background at
18 400 means, it is really not a good comparison.

19
20 How else can they understand it?
21 Well, a chest x-ray is 10. So, maybe in the
22 course of being sick a little bit, you will

1 get one or two of those a year maybe. Or in
2 the course of trying to stay healthy, you
3 might want to get one or two a year. But,
4 again, that doesn't really let a person
5 understand.

6 One of the things we found with
7 100 millirems per year, and I'm saying that
8 some of you may not like this, but it is the
9 way it goes. And that is that if you look at
10 what 100 millirems per year means, just doing
11 a BIER-VII calculation, what it means is that
12 there's a 1-in-273 chance that you will die of
13 an excess cancer because of having received
14 that extra 100 millirems per year.

15 Now people don't really understand
16 odds that well, except in the State that I
17 come from where they understand the odds well
18 enough to keep going back for some reason.
19 But if you put it in the context of Yucca
20 Mountain and the associated population right
21 there in Amargosa Valley who are going to be
22 the recipients of the water into which the

1 radioactive waste eventually is going to get,
2 the population of Amargosa Valley is about
3 1500 people. Many of them have lived there
4 most of their life or all their life.

5 So, if you look at a lifetime risk
6 of 1-in-273, and look at the population there,
7 that means that in a lifetime of Amargosa
8 Valley residents you are looking at probably
9 five people who would be excess cancer deaths.
10 And in a population that size, everybody knows
11 everybody. People understand that.

12 And I'm not saying that in all
13 cases you can use an example that is that
14 tight and that cogent, but it's got to be
15 something that is understandable to the point
16 where it doesn't outrage people that you are
17 exaggerating, but also something that can be
18 put in context. That's a rather raw example,
19 but it's true and it puts it very much in
20 context of what I mean when people have to
21 understand it, even if you don't like them to
22 understand it.

1 Thanks.

2 CO-CHAIR LASH: Thank you very
3 much.

4 Anything further from any of the
5 Commissioners?

6 (No response.)

7 Then, we will close this session.
8 We are going to move on for a deliberative
9 session. And, Tim, where will that take
10 place?

11 MR. FRAZIER: Upstairs.

12 CO-CHAIR LASH: Okay. Thank you
13 all very much for a very good hearing.

14 (Whereupon, at 3:23 p.m., the
15 proceedings in the above-entitled matter were
16 adjourned.)

17

18

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21

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