

BLUE RIBBON COMMISSION ON AMERICA'S
NUCLEAR FUTURE

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MEETING

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TUESDAY,
NOVEMBER 16, 2010

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The Commission convened at
8:30 a.m. in Salons B, C and D of the Marriott
Metro Center at 775 Twelfth Street, Northwest,
Washington, D.C., Lee Hamilton and Brent
Scowcroft, Co-Chairs, presiding.

MEMBERS PRESENT:

LEE HAMILTON, Chair
BRENT SCOWCROFT, Chair
MARK AYERS
VICKY BAILEY

ALBERT CARNESALE
SUSAN EISENHOWER
CHUCK HAGEL
JONATHAN LASH
ALLISON MacFARLANE
RICHARD MESERVE
ERNIE MONIZ

PER PETERSON
PHIL SHARP

ALSO PRESENT:

TIM FRAZIER, Designated Federal Official

KEVIN KAMPS, Beyond Nuclear

SUSAN CORBETT, Sierra Club

HANK JENKINS-SMITH, University of
Oklahoma

JOHN GARRICK, US Nuclear Waste Technical
Review Board

ANDY KADAK, Massachusetts Institute of
Technology

JOHN KOTEK, BRC Staff Director

PUBLIC COMMENTERS:

ALEX PAVLAK

BRENNAIN LLOYD

LINDA LEWISON

ELLEN THOMAS

ALFRED MEYER

DAVE KRAFT

CASH JASZCZAK

KEITH LARSON

DAN BROWN

DIANE D'ARRIGO

JAY MARX

T-A-B-L-E O-F C-O-N-T-E-N-T-S

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

(8:32 a.m.)

MR. FRAZIER: We are going to go ahead and get started. I would like to welcome you to Day 2 of the full commission open meeting of the Blue Ribbon Commission on America's Nuclear Future.

My name's Tim Frazier. I'm the Designated Federal Officer, and without any further wait, Congressman Hamilton, if you're ready, sir?

CHAIR HAMILTON: We're ready. Thank you very much, Tim. Good morning. Welcome back to the meeting of the Blue Ribbon Commission on America's Nuclear Future.

Let me remind the audience that at the end of today's session, we will hear from any member of the audience who wishes to speak. A sign-up sheet for the public comment period is available at the registration desk.

Please sign up before 11:00 a.m. so we have an accurate count. The amount of

1 time allotted to each speaker will depend on
2 the number of people who sign up to speak.

3 Our first presentation this
4 morning is by Susan Corbett and Kevin Kamps.
5 Ms. Corbett chairs the South Carolina chapter
6 of the Sierra Club.

7 Mr. Kamps holds the title of
8 radioactive waste watchdog with Beyond Nuclear
9 located in Takoma Park, Maryland.

10 Ms. Corbett and Mr. Kamps are here
11 representing a large number of organizations
12 and individuals who have signed a petition
13 that, we understand, they will present to the
14 Commission. They will also discuss their
15 views on the questions that the Commission has
16 asked our three subcommittees to address.

17 Ms. Corbett and Mr. Kamps, we
18 thank you very much for being with us this
19 morning, and we ask you now to come to the
20 microphone, if you will. This is Kevin Kamps,
21 I presume?

22 MR. KAMPS: Yes, it is.

1 CHAIR HAMILTON: All right.

2 Mr. Kamps, we're delighted to have you here.

3 Thank you, and you may proceed.

4 MR. KAMPS: Thank you, Chairman.

5 Chairman and Commissioners, my name is Kevin

6 Kamps, and I serve as radioactive waste

7 watchdog at Beyond Nuclear based in Takoma

8 Park, Maryland.

9 It's an honor and a privilege for

10 me to have been asked by a community of 167

11 national and grassroots environmental and

12 public interest groups across the United

13 States to speak on their behalf before you to

14 convey their strongly-held conclusions about

15 radioactive waste management.

16 I gave Mary Woollen, who then

17 handed out to you a copy of a packet, and I'll

18 go through it very quickly here so you know

19 what the pieces are.

20 The topmost piece is a cover

21 letter from a core group of organizations that

22 helped coordinate this group statement. The

1 next piece down is the document itself, which
2 is the answers to BRC key questions, and
3 you'll see at the end the 167 groups that are
4 signed on.

5 After that, the principals for
6 safeguarding nuclear waste at reactors and
7 then the statement by myself and then Susan
8 Corbett's statement.

9 So, I would like to begin by
10 thanking President Obama and Energy Secretary
11 Chu for their wise decision to cancel the
12 proposed Yucca Mountain, Nevada dump site for
13 high level radioactive waste.

14 This geologically unsuitable site,
15 which belongs to the Western Shoshone nation
16 by treaty right, should have been declared
17 unsuitable long ago.

18 I'd also like to take this
19 opportunity to thank President Obama for his
20 Women's History Month proclamation of March
21 2009 in which he honored Native American
22 environmental justice activist Grace Thorpe.

1 President Obama proclaimed, quote,
2 Grace Thorpe, another leading environmental
3 advocate, also connected environmental
4 protection with human well being by
5 emphasizing the vulnerability of certain
6 populations to environmental hazards. In
7 1992, she launched a successful campaign to
8 organize Native Americans to oppose the
9 storage of nuclear waste on their reservations
10 which she said contradicted Native American
11 principles of stewardship of the earth. She
12 also proposed that America invest in
13 alternative energy sources such as
14 hydroelectricity, solar power, and wind power,
15 end quote. That's from the President's
16 Women's History Month Proclamation of March
17 2009.

18 In addition to adamant opposition
19 to reprocessing and a call for isolation of
20 radioactive wastes from the living environment
21 for as long as they remain hazardous, the main
22 message I bring you today from the 167 groups

1 which have signed onto the answers to the key
2 Blue Ribbon Commission questions, is that the
3 only real solution to the radioactive waste
4 problem is to stop making it.

5 For the 63,000 metric tons of
6 commercial, high-level radioactive waste that
7 already exists in this country, an interim
8 first step to address dire safety and security
9 risks is hardened onsite storage wherever
10 feasible.

11 Nuclear weapons facilities must
12 devote all resources to exhuming, treating,
13 containing, and isolating from the environment
14 the decades old radioactive wastes,
15 particularly high-level liquids and sludges
16 and completely end development of new nuclear
17 weapons.

18 Any centralized interim storage
19 and the transport associated with it should
20 only be undertaken to enhance safety,
21 security, public health, and environmental
22 protection. Anything less would represent a

1 highly risky radioactive waste shell game on
2 our nation's roads, rails, and waterways.

3 Regarding stop making it. High
4 level radioactive waste has been accumulating
5 for 68 years since Fermi first split the atom
6 during the Manhattan Project, and we don't
7 even know how to safely and soundly and
8 permanently manage the first cupful.

9 Electricity is but the fleeting
10 byproduct from atomic reactors. The actual
11 product is forever-deadly high-level
12 radioactive waste. We need to stop making it.

13 As of spring 2010, enough
14 irradiated nuclear fuel and high-level
15 radioactive waste had been generated to
16 completely fill the now-cancelled Yucca dump
17 to its legal limit at least until a second
18 dump was opened in the east.

19 But the 104 operating commercial
20 reactors annually churn out an additional
21 2,000 metric tons of irradiated nuclear fuel,
22 all of which from now on is excess to the

1 first repository's capacity to accept
2 necessitating a second dump.

3 The Nuclear Regulatory Commission
4 over the past decade has rubber stamped 59 of
5 59 applications from nuclear utilities for 20-
6 year license extensions at aged, deteriorated
7 reactors.

8 In addition to the safety risks of
9 such decisions are the 20 metric tons per year
10 of additional irradiated nuclear fuel that
11 will be generated at each license extended
12 reactor. Now there is talk of 80 years of
13 waste generation at these reactors.

14 In addition, between 2007 and
15 2009, NRC docketed 26 applications for new
16 reactors. If licensed, if financed by
17 transferring most of the financial risk on the
18 U.S. taxpayers and/or rate payers, if actually
19 constructed and if actually operated, these
20 reactors would add to the mountain of
21 radioactive waste nearly 70 years high at this
22 point.

1 Incredibly, the Department of
2 Energy signed contracts with nuclear utilities
3 proposing 21 new reactors, transferring
4 ultimate liability onto the American taxpayer.

5 When were these contracts signed?
6 In the waning days of the George W. Bush
7 administration beginning on November 4, 2008,
8 the very day Barack Obama was elected
9 President and ending on January 22, 2009, two
10 days after he took the oath of office.

11 How do we stop making high-level
12 radioactive waste? Arjun Makhijani's 2007
13 book Carbon-Free and Nuclear-Free: A Roadmap
14 for U.S. Energy Policy shows the way. It
15 showed that by 2050 not only nuclear power but
16 also fossil fuels can be phased out from the
17 U.S. economy and replaced with energy
18 efficiency and diverse forms of renewable
19 sources such as wind, solar, and many others.

20 This can be done affordably and
21 with no further technological breakthroughs
22 required. Dr. Makhijani has since revised his

1 findings forward and says that this can now be
2 accomplished by 2040.

3 In fact, Mark Cooper of Vermont
4 Law School reported last year that rather than
5 build 100 new atomic reactors, the U.S. could
6 provide the same electrical end product for as
7 much as \$4 trillion less via efficiency and
8 renewables.

9 Moving on to hardened onsite
10 storage, or HOSS, storage pools densely packed
11 with irradiated nuclear fuel at reactor sites
12 are one of the most potentially catastrophic
13 safety and security risks in the U.S.

14 Whether due to accident or attack,
15 the loss of pool cooling water could result in
16 a matter of hours in a radioactive waste
17 inferno releasing more hazardous radioactivity
18 than was released by the Chernobyl nuclear
19 catastrophe.

20 The overall objective of HOSS
21 should be that the amount of radioactivity
22 releases projected and even severe attacks

1 should be low enough that the storage system
2 would be unattractive as a terrorist target.

3 Operating pools must be hardened
4 and transitioned to open-frame, low-density
5 storage, but current onsite dry casks storage
6 is far from good enough. Dry casks stored in
7 the open air were not designed nor
8 manufactured with terrorism in mind leaving
9 them vulnerable to attacks.

10 In addition, very serious quality
11 assurance violations have taken place with
12 both the design and manufacture of currently
13 deployed dry casks, as well as the pads they
14 rest upon.

15 For such reasons, periodic review
16 of HOSS facilities and fortified pools should
17 be required. Funding should be dedicated to
18 enable local and state governments to
19 independently monitor the sites.

20 The signatories to the current
21 Answers document feel so strongly that HOSS
22 should be implemented as soon as possible that

1 they have endorsed use of the nuclear waste
2 fund to do so, even though the nuclear
3 utilities that have generated the irradiated
4 fuel in the first place and not the rate
5 payers should be held responsible and liable
6 for these costs.

7 Originally proposed by the safe
8 energy community in 2002, HOSS is now one of
9 the widest points of consensus among
10 communities impacted by nuclear energy and
11 supported by those near nuclear weapons
12 production sites, as well.

13 Unfortunately, to date, this
14 proposal has been largely ignored by the
15 industry, its regulators, and elected
16 officials. A position statement, Principles
17 for Safeguarding Nuclear Waste at Reactors,
18 it's self-signed by 170 groups, has been
19 delivered to you today.

20 Regarding centralized interim
21 storage, Winona LaDuke, an Ojibwe
22 environmental justice and anti-nuclear leader,

1 has quipped, "The greatest minds in the
2 nuclear field have been hard at work for over
3 50 years in search of a solution to the
4 radioactive waste problem, and they finally
5 found one. Haul it down a dirt road and dump
6 it on an Indian reservation."

7 Keith Lewis, a Serpent River first
8 nation environmental defender from near the
9 uranium mines and mills of Elliot Lake,
10 Ontario, has said that, "There is nothing
11 moral about buying out somebody who is
12 starving."

13 As President Obama himself
14 indicated by honoring Grace Thorp, such
15 environmental injustice must be stopped once
16 and for all. Parking lot dumps for irradiated
17 nuclear fuel as licensed by NRC at the Skull
18 Valley Goshutes Reservation in Utah as
19 promoted by DOE's nuclear waste negotiator,
20 David Leroy at Mescalero Apache Reservation in
21 New Mexico, and as yet being pursued at Native
22 American reservations as we speak by the

1 nuclear power utilities are intolerable and
2 insufferable.

3 Nearly 450 national and grassroots
4 groups indicated just that in a statement
5 declaring private fuel storage at Skull Valley
6 unacceptable five years ago.

7 In addition to the hazards of the
8 back end of the uranium fuel chain being
9 targeted at low income and people of color
10 communities, often too the front-end hazards
11 of the uranium fuel chain are targeted at
12 these same communities.

13 Uranium mining proposals are
14 currently threatening not only the Grand
15 Canyon's indigenous inhabitants, the
16 Havasupai, but also the sacred Mount Taylor,
17 as well as Navajo Indian country despite the
18 Navajo tribal council's clearly stated law
19 banning any and all uranium mining, milling,
20 and processing activities on its land.

21 Thus, the phasing out of nuclear
22 power and its replacement with efficiency and

1 renewables will end such environmental
2 injustices at the front end of the uranium
3 fuel chain, as well.

4 Finally, regarding transportation,
5 the shipping of a irradiated nuclear fuel by
6 truck, train, and barge has been described by
7 phrases such as mobile Chernobyl and dirty
8 bombs on wheels.

9 Again, irradiated nuclear fuel
10 shipping containers were not designed with
11 terrorist attacks in mind and their
12 questionable structural integrity raises
13 serious concern about their ability to
14 withstand severe accidents, as well.

15 The movement of such potentially
16 catastrophic hazards through major population
17 centers must occur only when it improves
18 safety, security, and the protection of public
19 health and the environment.

20 In closing, on behalf of
21 167 national and grass roots environmental and
22 public interest groups, I emphasize the urgent

1 need to safeguard and secure the high-level
2 radioactive wastes currently stored at reactor
3 sites in hardened onsite storage as an interim
4 measure. I emphasize the wisdom of phasing
5 out dirty, dangerous, and expensive nuclear
6 power and replacing it with safe, secure, ever
7 more cost effective and truly clean efficiency
8 and renewables.

9 This will also benefit
10 environmental justice, which also demands that
11 the lands and communities of indigenous
12 peoples never again be targeted by the most
13 hazardous stages of the uranium fuel chain
14 from uranium mining to radioactive waste
15 storage and burial.

16 The final thing I'll mention is
17 that in addition to the 167 groups on the
18 statement, this is a petition containing over
19 3,300 signatures from individuals, and I can
20 leave this copy, as well. With that, I'll
21 turn it over to Susan.

22 CHAIR HAMILTON: Thank you very

1 much, Mr. Kamps. We'll now hear from Susan
2 Corbett.

3 MS. CORBETT: Good morning. Thank
4 you all for allowing me to be here today and
5 speak. My name is Susan Corbett. I live in
6 Columbia, South Carolina. I drove up
7 yesterday and driving back today after I
8 finish here.

9 I am the chair of the South
10 Carolina chapter of the Sierra Club. We have
11 over 5,000 members in our state. I'm also the
12 chair of the national Sierra Club Nuclear
13 Issues Activist Team, which is the national
14 Sierra Club team that kind of watchdogs
15 nuclear issues.

16 I serve in a volunteer position.
17 I don't get paid to do this. I'm a layperson,
18 but I have been kind of involved in watching
19 these issues since the 1970s when they built
20 the VC Summer Plant about ten miles from where
21 I was living.

22 I'm here today to represent, as

1 Kevin did, 167 different groups around the
2 country who have expressed their concerns
3 about nuclear waste and what to do with it,
4 but also very importantly to you. I'm also
5 here today representing a coalition of South
6 Carolina groups, which is called the common
7 agenda, which is a collective effort of
8 36 organizations in South Carolina
9 representing over 45,000 South Carolinians.

10 South Carolina is one of the most
11 nuclear states. Sorry for my throat. We have
12 seven operating reactors. We have the
13 Savannah River site. We have the Barnwell
14 Low-Level Waste dump, we call it.

15 We have the Westinghouse Fuel
16 Fabrication Plant. We have a Nuclear Laundry.
17 I'm sure we have more, but we are definitely
18 a state that is heavily invested in all things
19 nuclear.

20 But, our point here today is that
21 we feel like the government in partnership
22 with the nuclear industry has been running a

1 kind of deficit program. It's not a deficit
2 in a traditional sense, but it's a deficit
3 nonetheless because we have been taking the
4 benefit of the electricity created by nuclear
5 power, but we really haven't been paying the
6 bill in full.

7 We've been allowing this nuclear
8 waste to accumulate thinking that we would
9 find some way to deal with it and now here we
10 are. We -- thank you. The day has come. We
11 have got to pay this bill. We can't keep
12 going forward kicking this can down the road.

13 The failure of Yucca Mountain has
14 made that very obvious to us, and we're very
15 concerned that we must take every conceivable
16 step to isolate these long-lived radioactive
17 materials from groundwater. We must not allow
18 this to get into the groundwater, either
19 current or future supplies of groundwater.
20 It's going to be very important that we
21 protect our water in the future and we don't
22 want radioactive material seeping into that.

1 So, what to do with the 67,000
2 tons of irradiated spent fuel? It's a major
3 concern to reactor communities, and it's very
4 much a concern to communities that know
5 they're being targeted as some kind of site
6 for nuclear waste disposition.

7 We down in South Carolina know
8 there is a strong push to consider
9 reprocessing. We hear this every day in the
10 state legislature. We hear it down at
11 Savannah River in Aiken and Augusta.

12 We hear all the glowing, wonderful
13 things about reprocessing, but I am here to
14 tell you today that conservation groups around
15 the country, and particularly conservation
16 groups in South Carolina -- are we going to
17 stand unanimously against this?

18 Groups in South Carolina cover a
19 wide variety of positions regarding the role
20 of nuclear energy in our future, but we stand
21 together in our opposition to reprocessing
22 because we know what results. We've seen it.

1 Other communities are going to
2 feel the same way. It's not -- I'm speaking
3 for not just my state, but other communities,
4 too, that are looking at this prospect.

5 I am sure that you are aware that
6 non-proliferation groups are also very
7 concerned about starting up reprocessing. Two
8 weeks ago I toured Savannah River site. I go
9 there at least once a year or so -- I try to
10 go.

11 I always come away with a couple
12 of feelings. The first thing I come away with
13 is tremendous, tremendous respect for the
14 people, the men and women, who work there on
15 a daily basis and work all the high-tech
16 procedures and dangerous and they do a great
17 job there.

18 We want to support missions for
19 Savannah River site that involve clean energy.
20 We're very much in favor of that, but the
21 other thing that I come away with when I'm
22 there is why would we ever consider restarting

1 a process that created this, one of the
2 biggest environmental nightmares, and other
3 sites, too, around the world.

4 Why would we ever -- why would
5 South Carolina, or any community, allow this
6 process to restart? Why would any community
7 want DOE to start up a process that's going to
8 create such a legacy of more nuclear waste?

9 The 36 or so million gallons of
10 high-level waste is sitting in the tanks at
11 Savannah River are significant and very
12 problematic. I go to the Governor's Nuclear
13 Advisory Council meetings all the time and
14 listen to them talk about it.

15 I mean, it's still decades --
16 decades have gone by. In 2008, Terrel Spears
17 who was then the assistant manager of the
18 waste disposition project at DOE told the
19 National Academy of Sciences Clean-Up
20 Technology Roadmap Committee that "radioactive
21 waste stored in the Savannah River site tanks
22 poses the single largest environmental risk to

1 the State of South Carolina."

2 That's my state. Some of the
3 waste in those tanks -- it was originally --
4 it was all going to be removed, but now it got
5 through these kind of last minute
6 reclassification. It got reclassified is what
7 it's called. WIR, Waste Incidental to
8 Reprocessing.

9 So, now it's not even all going to
10 leave. I mean, they're using these grouting
11 methods to grout what they can't get rid of
12 and mix it and then leave it and especially
13 the sludge at the bottom of the tanks and some
14 of that -- some of the tanks that have already
15 been cleaned, there's still a lot of
16 radioactivity in the bottom of those tanks and
17 now the plan is just to grout them and leave
18 them there and this is an area -- it's going
19 to be orphaned there and this is an area with
20 a very high water table.

21 It sits right atop of the
22 Tuscaloosa aquifer. This -- would new

1 commercial reprocessing ventures include WIR
2 waste and the abandonment of it at Savannah
3 River? Actions like this are what are causing
4 us to question this whole thing, and we just
5 feel like we're going to become more of a home
6 for more stranded nuclear waste.

7 We in South Carolina are not
8 alone. I mean, other communities -- I'm
9 speaking for South Carolina, but I'm also
10 speaking for other communities around the
11 country that are very concerned about this
12 same scenario and so they were just -- and DOE
13 has got to resist the temptation to succumb to
14 contractors and those that are seeking to
15 profit from new missions.

16 We cannot allow them to be
17 characterized as the community -- the voice of
18 the community. Company towns are notoriously
19 unwilling -- they're unable to confront their
20 employers, their fear of job losses, their
21 fear of being ostracized in the community for
22 speaking up.

1 I mean, I go down to Aiken all the
2 time. Nobody down there will say a word. I
3 mean, a few people will, but every meeting I
4 go to in Aiken and North Augusta, it always
5 starts with a very perfunctory parade of local
6 officials who come out and rubberstamp it and
7 never speak against it no matter how
8 questionable or onerous the mission is.

9 Then those people are always
10 followed by heartfelt, well-thought-out, well-
11 spoken citizens who might dare venture out.
12 A lot of us have to come from outside the area
13 because the local folks are worried and
14 concerned about speaking up.

15 I don't understand why the rush is
16 to think about reprocessing because I think if
17 you look around the world, I'm not seeing in
18 what I'm reading that this has really proved
19 to be any good solution, and it creates more
20 volume.

21 I mean, and I just read yesterday
22 that when you put together the high level and

1 the greater-than-Class-C waste, you actually
2 end up with more waste that's going to have to
3 go to repository.

4 Of course, we know you create a
5 larger volume of raw with more low level waste
6 and the other thing that's really disturbing
7 to me is I did some research from -- on this
8 is that the six combined countries that have
9 been reprocessing have now managed to
10 stockpile 215 metric tons of weapons usable
11 plutonium.

12 I mean, I can't feed it back into
13 the system fast enough, so they got -- you
14 have these stockpiles of this plutonium out
15 there. The proliferation risks of this are
16 significant.

17 I was going to tell you a story
18 about some Armenians who just tried to smuggle
19 out some highly enriched uranium, but I'm not
20 going to go into that here. I'm sure you all
21 are aware of the proliferation risks of
22 separating out weapons-usable material.

1 I also think that reprocessing
2 would send the wrong signal to the rest of the
3 world. I know other countries are doing it,
4 but I don't think we should engage in do as we
5 say, not as we do technologies on any level.
6 I mean, what are we going to do?

7 Are we going to police the whole
8 world and their reprocessing activities? Are
9 we going to get engaged in that or are we
10 going to end up being target by some rogue
11 state who does their own kind of reprocessing?

12 There are so many reasons to
13 oppose reprocessing. It's hard to talk about
14 them all here. I mean, look at our military
15 sites, Hanford, huge messes we've created
16 there we can't clean up.

17 Look at West Valley. I just got a
18 report from a friend of mine yesterday, West
19 Valley. Huge plume underground migrating from
20 a spill in the reprocessing building costing
21 taxpayers billions of dollars.

22 They don't even know if they can

1 clean it up. They were going to dig it all up
2 and move it somewhere, probably to Barnwell.
3 It's a debacle. It was a financial failure
4 and it was an environmental failure, so we
5 tried reprocessing in this country.

6 In France, the French are doing
7 it. They're dumping the liquid waste in the
8 North Sea -- in the English Channel, I mean.
9 They don't have a geologic repository, and
10 they also have stockpiled plutonium.

11 Sellafield, Mayak in Russia,
12 environmental disasters there, very dirty
13 place. The Japanese, I read yesterday, I
14 think, that over \$20 billion they've invested
15 in Rokkasho and it still hasn't started and
16 they said that this is the 18th postponement
17 of it and it's 15 years behind schedule.

18 So, reprocessing is going to put
19 this enormous financial burden on a nation of
20 taxpayers who is already on the edge. It's
21 too expensive. It's too expensive.

22 Also, if you are trying to promote

1 nuclear power as some future energy source,
2 according to the GAO, reprocessing adds
3 25 percent more to the direct cost, so you're
4 kind of -- it's already pricing itself out of
5 competition anyway.

6 If you add this on top of it,
7 forget it; it's just going to be so expensive.
8 So, you're not helping sell the industry as a
9 power source by adding more cost to it.

10 It's unnecessary to do this. The
11 people that signed the grassroots answers
12 document feel that the once-through fuel chain
13 is preferred to any kind of reprocessing
14 chain.

15 So, we urge you to put aside and
16 put away this notion of reprocessing in the
17 United States. We don't need to do it. We
18 totally support hardened onsite storage with
19 improved methods for keeping it onsite, and we
20 know this is not a permanent solution, but we
21 think this is much preferred until we find a
22 permanent geologic repository.

1 Finally, for the record, I want to
2 say that South Carolina conservation groups
3 are also very opposed to any kind of
4 centralized interim storage as in bringing it
5 down to our state and leaving it there and
6 hoping it's going to get taken care of.

7 Our former governor, Dick Riley,
8 expressing his aversion to a nuclear waste
9 storage, once pronounced what became known as
10 Riley's law of nuclear waste. He said,
11 "Nuclear waste tends to stay where you put it
12 last."

13 Certainly, that's been true in
14 South Carolina where we have been the
15 recipients of massive amounts of waste and
16 very little has ever left.

17 I got this quote from the common
18 agenda folks. "South Carolina's conservation
19 community is opposed to bringing anymore out
20 of compact low-level waste or any high-level
21 nuclear waste into our state and it has grave
22 concerns about further reprocessing missions,

1 which would dramatically increase the
2 radioactive waste burden at the Savannah River
3 site."

4 Organizations in our state that
5 have taken this position opposing our
6 reprocessing include Coastal Conservation
7 League, which is the largest group in the
8 state, Conservation Voters of South Carolina,
9 the League of Women Voters of South Carolina,
10 Audubon Society, Friends of the Earth South,
11 Sierra Club, and a whole host of other
12 organizations.

13 Thinking about decentralized
14 storage is that when you keep it in
15 decentralized locations, you kind of keep
16 multiple congressional districts engaged in
17 the discussion, which is a good thing because
18 otherwise you just get this out of site, out
19 of mind mentality going on.

20 Just dump it in South Carolina.
21 We'll figure out something later on. Having
22 that same thing with the MOX fuel. They

1 borrow the surplus plutonium down there to our
2 state. We're going to build this MOX plant
3 and they're scheduled to be -- they have
4 nobody to take the fuel.

5 Duke backed out of its contract,
6 and we're hearing now it's going to be forced
7 on TVA, but we don't know where that's going,
8 so they cancelled that.

9 Then there's this big lawsuit
10 about Yucca Mountain because they're saying
11 that all the vitrified waste was supposed to
12 go to Yucca Mountain when we know that really
13 only 10 percent of Yucca was set aside for
14 vitrified -- for DOE waste, and that included
15 all the DOE sites, so really, if you look at
16 the numbers, there was a significant amount of
17 waste that was going to get left at Savannah
18 River I guess for some second repository,
19 whenever that happens, but essentially, it's
20 going to be orphaned there.

21 So, we in South Carolina are going
22 to look very skeptically at any kind of plan

1 to stockpile spent commercial fuel in a
2 central location based on our experience in
3 the past.

4 I think that other states and
5 other communities are going to have that same
6 concern. So, in conclusion, we respectfully
7 ask that this Commission keep this process
8 open for all people to participate and those
9 who are profiting or stand to profit from
10 radioactive waste produced emissions at DOE,
11 they should not be allowed to dictate the
12 policies that further burden these states or
13 make these difficult decisions.

14 If you're meeting with booster
15 groups because certainly all of these company
16 towns have booster groups, and I know lots of
17 those folks are great folks, but if you're
18 going to meet with those, you should meet with
19 the local conservation groups, as well.

20 We don't believe that you should
21 be having meetings with special interest
22 groups who seek to profit from these kinds of

1 difficult decisions.

2 Finally, I guess the real
3 discussion should be is whether we really,
4 truly need nuclear power in the future. Are
5 there better, safer, cheaper, non-waste-
6 producing, healthy energy sources to replace
7 it in the 21st century and is energy
8 efficiency technologies emerge and new
9 renewable energy sources, we might find that
10 we don't need to depend on this very expensive
11 and problematic energy source. Thank you.

12 CHAIR HAMILTON: Well, thank you
13 very much, Ms. Corbett. We thank you and
14 Mr. Kamps for your statement. Are you
15 prepared to take questions, the two of you?

16 MS. CORBETT: Sure.

17 CHAIR HAMILTON: Would you please?
18 Do the Commissioners have questions?
19 Jonathan?

20 MEMBER LASH: So, our mandate is
21 not really to make decisions on whether
22 nuclear power makes up part of the future

1 energy mix to the United States, but the first
2 part of what you said, Ms. Corbett, about we
3 have these wastes, we have a responsibility
4 that we haven't met to address them is at the
5 core of what our responsibility is.

6 One of the questions for us is not
7 having successfully answered the question
8 about what to do with those wastes over the
9 past 40 years, what kind of institutional
10 arrangements can we create that would work to
11 create both a technically viable and a
12 socially viable solution?

13 I wonder if you have thoughts for
14 us on that. If you could create an
15 institution to move forward, what would it
16 look like?

17 MS. CORBETT: Well, this is like -
18 - what is -- what was that conundrum at the
19 Star Trek thing where he says, "No good
20 answer?" You know, it's like you have to fool
21 the computer or something.

22 There's really no good answer. I

1 put this out to my son. He said, "We'll just
2 shoot it up to the sun or let it burn up in
3 the atmosphere." Everybody says that. It's
4 amazing how many people think that.

5 There's no good answer, and I look
6 at this -- this is -- people worry about
7 handing our children this financial debt that
8 we've accumulated. Well, I'm worried about
9 handing them this radioactive debt, too,
10 because it's not going away any sooner.

11 I think that since this country
12 and all -- lots of states, especially in the
13 East, have benefitted from nuclear power, it
14 makes sense to have everyone share in the
15 responsibility of taking care of the waste.

16 Right now, the idea of keeping it
17 onsite where it is being kept anyway, just
18 with improved storage methods, hardened
19 onsite, I worry about the fuel pools. I think
20 it's a vulnerable area. It needs to be
21 strengthened.

22 But, I think it's preferable to

1 keep it onsite. I know there may be a few
2 locations where it's not -- it's not the best
3 place, but I think that's preferable to a
4 centralized dump or reprocessing and it's just
5 -- there's no good answer.

6 There is no good solution. We've
7 painted ourselves into a very dark corner
8 here. Kevin, did you have anything you want
9 to add?

10 MEMBER LASH: Keep it onsite for
11 how long?

12 MS. CORBETT: Until we can locate
13 a -- several geologic repositories that truly
14 meet the criteria of being able to isolate it
15 from the biosphere.

16 MEMBER LASH: So, I really wanted
17 to get to the last part of that question.
18 What kind of institution should be responsible
19 for locating, selecting, developing, and
20 building such a deep geologic repository?

21 MS. CORBETT: Go ahead.

22 MR. KAMPS: Okay. Yes, the

1 institutional arrangements -- well, it's
2 interesting that a lot of our groups for a
3 very long time, especially in the heat of the
4 Yucca Mountain debate 15 years ago, 10 years
5 ago, were calling for a blue ribbon
6 commission.

7 So, we're thankful that there's
8 one in existence. We wish it were more
9 balanced for sure. We don't really feel
10 represented by anyone who serves on this
11 commission.

12 A lot of our groups have been at
13 this, some of our groups for as long as 30
14 years or more dealing with the radioactive
15 waste problem. So, institutionally, we would
16 certainly emphasize democratic decision-
17 making, a very diverse group of people at the
18 table representing all kinds of interests, so
19 community groups, environmental groups,
20 grassroots groups.

21 Certainly traditional Native
22 Americans who've been targeted so many times,

1 unfortunately, their tribal government
2 sometimes will be working with the Department
3 of Energy, the Nuclear Waste Negotiator, in
4 the past to open these dumps against the will
5 of the people.

6 In the case of Grace Thorpe, who
7 President Obama honored a year ago, she got
8 that tribal council fired from its job almost
9 immediately because of their position on this
10 issue and replaced with new tribal council
11 government.

12 So, institutional arrangements
13 must be democratic, must be diverse. I can
14 add that the Department of Energy is very much
15 distrusted by most of the people in our
16 community after the experiences, especially at
17 Yucca Mountain, but others, as well.

18 The Nuclear Regulatory Commission,
19 as well, is very much distrusted. You asked
20 how long the waste should stay at the reactor
21 sites. Well, the NRC just updated its so-
22 called Nuclear Waste Confidence Decision

1 recently, which many of our groups see as a
2 con game.

3 It blocks our groups from
4 challenging the generation of radioactive
5 waste and any licensing proceeding. The NRC
6 is now saying that wastes can stay safely
7 onsite in pools and dry casks for 60 years
8 post-operations.

9 So, 60 years of operations plus
10 60 years post-operations is 120 years. Eighty
11 years of operations is being talked about.
12 Eighty plus 60 is 140 years of onsite storage,
13 and the NRC commissioners have now mandated
14 the staff to look at even longer term storage
15 onsite, we're talking centuries, where we're
16 seeing at a place like Palisades in Southwest
17 Michigan the fourth cask they loaded in 1994
18 has defective welds.

19 The company swore under oath to a
20 federal judge they would simply reverse the
21 loading procedure back into the pool if there
22 were any problems. That cask has sat loaded

1 on the Lake Michigan shoreline for 16 years
2 now with defective welds.

3 As I mentioned, the quality
4 assurance problems -- we're seeing inner-seal
5 leaks with dry casks, so the inert gas that
6 transfers heat and protects the nuclear waste
7 from corrosion is leaking internally.

8 So, these containers are going to
9 have to be replaced over time. So, that's why
10 we call for hardened onsite storage. It's not
11 just fortifications. It's also a dramatic
12 improvement in the quality of these containers
13 so that we don't see environmental leakage at
14 some point.

15 CHAIR HAMILTON: Per and then
16 Allison.

17 MEMBER PETERSON: Thank you. I
18 appreciate very sincerely the opportunity to
19 hear about this report. I'd like to look into
20 one of the questions that's, I think, a real
21 challenge facing our country.

22 You'd noted that Arjun Makhijani

1 has done studies on approaches to achieve
2 replacement of existing coal and nuclear
3 infrastructure with non-carbon-emitting
4 sources by 2040.

5 There's a huge literature on this
6 question because when you look at the
7 magnitude of the challenge, it's enormous to
8 try to replace the energy infrastructure.

9 One of the papers that's commonly
10 cited is Sokolov and Paka's paper on carbon
11 ledges, and when you start to look at the
12 magnitude of the existing infrastructure plus
13 projections for likely growth, it looks very
14 challenging.

15 So, the question does relate to
16 the existing infrastructure that we have.
17 Currently, 54 percent of our electricity
18 generation is coal. Twenty percent is
19 nuclear, so that means that we're looking at -
20 - over the next several decades, we will have
21 to replace this existing infrastructure.

22 In any case, it's at least \$2

1 trillion plus finance charges plus
2 transmission upgrades to attempt to do that,
3 and that's in the face of having to make
4 investments in other infrastructure, clean-up
5 of DOE sites.

6 I can give you a long list of
7 things which are decaying away in California,
8 buildings which are seismically unsafe, lack
9 of high-speed rail. So, in this challenge, it
10 may take some time to get this infrastructure
11 replaced, and so one of the questions that's
12 directly relevant to this commission is
13 whether it makes sense as a country to
14 prioritize replacing the coal plants first or
15 to replace the nuclear first.

16 This will have a large impact --
17 the decision which way to go has a large
18 impact both on U.S. carbon emissions and on
19 waste generation.

20 So, what I'd be curious about is
21 do Beyond Nuclear and Sierra Club have some
22 position in terms of whether we should be

1 focused on shutting down existing -- this is
2 existing infrastructure -- coal plants or
3 nuclear plants first.

4 MS. CORBETT: I can tell you what
5 I think national Sierra Club would say. They
6 have a very big focus on shutting down coal.
7 They know nuclear is problematic, but we have
8 a huge campaign.

9 We believe that there is global
10 warming caused by human activity and that coal
11 is a major culprit, so we see that as the most
12 threatening energy source being coal, and also
13 with mountaintop removal, which is just
14 horrific what it's doing to the mountains of
15 West Virginia and Kentucky and other states.

16 So, I would say that Sierra would
17 probably, if you were to talk to the guys at
18 the top, they would say we want to shut the
19 coal plants down first.

20 But, I've also heard Michael
21 Broome debate the future of nuclear, and he
22 recognizes the tremendous challenges of

1 keeping it going at the cost, the waste issue,
2 all of that. So, it's -- again, it's a really
3 tough choice, but if I had to speak for
4 Sierra, I would say coal first.

5 MR. KAMPS: Well, just to follow
6 up on Susan there, with Sierra Club, we have
7 a coalition fighting the Fermi 3 new reactor
8 proposal in Monroe, Michigan, and we're proud
9 that the Michigan chapter of the Sierra Club
10 has joined us in that intervention. There's
11 an example of a new reactor fight.

12 In terms of old reactor license
13 extensions, Davis-Besse near Toledo,
14 incredibly, has just applied for a 20-year
15 license extension despite its horrible history
16 of operations and we're very proud that the
17 Sierra Club of Ohio has stepped forward and
18 spoken out strongly against that license
19 proposal.

20 So, to address your question about
21 coal or nuclear, which to phase out first, I
22 think that's the elegance of Dr. Makhijani's

1 book, Carbon-Free and Nuclear-Free: A Roadmap
2 for U.S. Energy Policy. It foresees,
3 envisions, a phase-out of both dirty fossil
4 fuels and dirty and dangerous and expensive
5 nuclear power simultaneously by the year 2040.

6 Just to give you an example,
7 again, from the Great Lakes. Michigan State
8 University, the Land Use Institute, published
9 a report in October of 2008 identifying
10 320,000 megawatts of wind power potential on
11 the Great Lakes available to the State of
12 Michigan alone that has yet to be tapped.

13 We're beginning to see, as with
14 Governor Granholm's Great Lakes Offshore Wind
15 Initiative, the beginnings of tapping that
16 tremendous potential, so there's tremendous
17 potential.

18 Dr. Makhijani in his work cites
19 seven Great Plains states, any one of which
20 could displace the 20 percent of the
21 electricity this country gets from nuclear
22 power, take Montana as one example, combined

1 with compressed air storage and we've got the
2 storage we need.

3 Wind power has tremendous
4 potential. Solar power, geothermal, the list
5 is a long one, and efficiency is the lowest
6 hanging fruit of all.

7 MS. CORBETT: I would like to add
8 something to that. We did -- we had a booth
9 at the state fair this year, which is always
10 an interesting experience to go, the South
11 Carolina State Fair, and we had a little -- we
12 had a box from the utility company that has
13 like a meter like you have on your house, and
14 we put the incandescent bulb in there.

15 Of course, the meter goes, "reer,
16 reer," because it's using up so much energy.
17 Then we put a compact fluorescent in there,
18 and it kind of slows down. Then we put a new
19 LED light in there and people were astounded
20 because it doesn't use any electricity. It's
21 so incredible.

22 So, when you think about just

1 changing some major things like that. The
2 other thing that's happening in South Carolina
3 is a fourth of our electricity is hot water,
4 electric hot water. In a state with 300 days
5 of sun, we could all have solar hot water
6 heaters.

7 We could take the \$10 billion
8 they're using to build a new nuke, give
9 everybody a solar hot water heater. We don't
10 need the nuke because we got plenty. And,
11 keeping in mind what Kevin said, DOE has
12 determined we have over four gigawatts of
13 offshore wind between Myrtle Beach and
14 Savannah. Four gigawatts of offshore wind.
15 We're just -- we could tap into that.

16 MEMBER PETERSON: I appreciate
17 that. So, for -- just for clarity then, the
18 Beyond Nuclear would phase out at equal rates
19 coal and nuclear as opposed to prioritizing
20 nuclear for phase out or prioritizing coal for
21 initial phase out?

22 At equal rates, simultaneously

1 phase them both out --

2 MR. KAMPS: Our organization --

3 MEMBER PETERSON: -- running
4 plants longer.

5 MR. KAMPS: Our organization is
6 focused on the nuclear power industry, but we
7 recognize the dire crisis of the climate and
8 so we -- I would agree with what you said. I
9 would also urge the Commission, if it hasn't
10 already, to get in touch with Annmarie Levins
11 if you're interested in the economics and the
12 time to deployment of various energy sources
13 and he has shown in his recent studies that
14 micro power and megawatts have out-competed
15 nuclear and that this has been going on for
16 decades.

17 CHAIR HAMILTON: Okay. Allison?

18 MEMBER MACFARLANE: Thanks.

19 Thanks a lot for coming this morning and for
20 your words. I want to tap into your long
21 experiences into -- in this issue, in
22 particular, and I acknowledge you guys as

1 experts because you have been looking at this
2 for so long.

3 So, I want to sort of revisit some
4 of the issues that Jonathan Lash raised and
5 ask you, in particular, let's set aside what
6 happens with nuclear power, okay. Say it all
7 stops tomorrow, whatever.

8 We still have this legacy of waste
9 to deal with, and given that, I want to
10 understand how to find a site to deal with
11 this waste and then what -- how to assure that
12 the site is safe.

13 So, I'd like to understand from
14 you -- I know, Ms. Corbett, you said that you
15 -- we need to take steps to isolate
16 radioactive waste from groundwater, so what
17 would assure you that a site was safe? How
18 would you pick a safe site?

19 MS. CORBETT: I -- the only thing
20 we can do is get the best geologists in our
21 country to come forward and find those
22 locations where water hasn't migrated, it

1 isn't likely to migrate.

2 I mean, I understand from a
3 presentation I saw a couple years ago that
4 there are virtually no places in the western
5 United States where there are stable geologic
6 formations, and all of the really, truly
7 stable geologic formations where this is
8 possible are in the eastern United States.

9 MEMBER MACFARLANE: No, that's not
10 actually true.

11 MS. CORBETT: Not totally true?
12 Okay.

13 MEMBER MACFARLANE: There's plenty
14 in the West that's stable, too.

15 MS. CORBETT: In the West, too?

16 MEMBER MACFARLANE: Yes.

17 MS. CORBETT: Well, I mean stable
18 in terms of not allowing -- not having water
19 pass through there.

20 MEMBER MACFARLANE: Yes, well --

21 MS. CORBETT: Wouldn't that --

22 MEMBER MACFARLANE: -- anywhere on

1 any piece of land at a certain depth there is
2 water.

3 MS. CORBETT: Right.

4 MEMBER MACFARLANE: There's water
5 underlying rocks on the entire globe. That's
6 how the earth --

7 MS. CORBETT: So, there's no place
8 to put it where water cannot get to it then is
9 what you're saying?

10 MEMBER MACFARLANE: Well, water
11 actually isn't bad.

12 MS. CORBETT: Okay.

13 MEMBER MACFARLANE: Water's your
14 friend, although you've been -- you've been
15 taught -- but Yucca Mountain has screwed up
16 everybody in the United States.

17 Water is your friend. Everybody
18 else in the entire world is looking at a wet
19 site, and that's better because spent nuclear
20 fuel is stable in a wet site and not stable in
21 a dry site.

22 So, that's -- but that's

1 technically --

2 MR. KAMPS: Yes, I was just going
3 to add that I think the Yucca Mountain
4 history, experience has a lot of lessons to
5 teach us about what not to do, so we saw in
6 1987 a nationwide site search that involved
7 various geologic media and various parts of
8 this country suddenly suspended for political
9 reasons.

10 In 1986, the eastern site search
11 was indefinitely suspended and then the screw
12 Nevada bill was passed in 1987 for raw
13 political reasons. That was the beginning of
14 the end for that program.

15 You saw the resistance with your
16 own eyes over the past 25 years.

17 MEMBER MACFARLANE: So, what would
18 you do instead?

19 MR. KAMPS: Well, science has to
20 be the driver and not politics.

21 MEMBER MACFARLANE: Okay.

22 MR. KAMPS: We need to take our

1 time. Again, Dr. Makhijani has done a lot of
2 work on this and had recommendations. Our
3 community looks to him for a lot of
4 leadership, and he has suggested that we take
5 our time. If it takes decades to do studies
6 to make sure that the geology -- and you'll
7 see it in our statement, we are calling for
8 isolation of radioactive waste for as long as
9 it remains hazardous.

10 We're also calling for zero
11 release into the environment, and that is the
12 position of groups, many of which live at
13 sites targeted for geologic repositories.

14 In December of 2008 as the Bush
15 Administration was leaving office, the Energy
16 Secretary, Samuel Bodman, put out a report.
17 There's a map of the United States on Page 12
18 that shows where the DOE was considering for
19 a second repository site.

20 It's pretty much the entire
21 country, so a lot of our groups are concerned
22 about this issue, as well. But one example,

1 I'll mention New Hampshire. In mid-1980s, New
2 Hampshire was at the top of the list, one of
3 the top sites in the East, being looked at --

4 MEMBER MACFARLANE: So what's
5 wrong with New Hampshire?

6 MR. KAMPS: -- by the Department
7 of Energy. The process, for one thing. The
8 public felt railroaded --

9 MEMBER MACFARLANE: Okay.

10 MR. KAMPS: -- and turned out in
11 large numbers at every turn, and just to give
12 you an example of the widespread opposition of
13 -- about -- well over 95 percent of the towns
14 in New Hampshire -- more like 99 percent of
15 the towns in New Hampshire said no way, no
16 repository here.

17 The concern was not only the
18 fractured geology, the fractured granite that
19 was being looked at, but also the
20 socioeconomic impacts of displacing seven
21 towns centered around Hillsborough.

22 The first place in the country

1 named after George Washington was included.

2 The first Seventh Day Adventist Meetinghouse.

3 MEMBER MACFARLANE: So --

4 MR. KAMPS: So, there's never been
5 just the technical aspects. There's
6 socioeconomic. There's environmental justice.
7 There's so many issues that are being
8 neglected by decision makers.

9 MEMBER MACFARLANE: So, I guess I
10 just want to ask you --

11 MEMBER LASH: Allison, could I
12 just interrupt for a moment?

13 MEMBER MACFARLANE: Yes. Yes.

14 MEMBER LASH: So, I was the top
15 environmental official in Vermont when that
16 process came to Vermont, and we did, indeed,
17 have truckloads of Canadian loggers come down
18 and chant in the back of the room and every
19 person in the surrounding towns was angrily
20 opposed, but I have to say no one had
21 explained what this process was.

22 There was no preliminary effort to

1 have people understand why the screening was
2 going on or what responsibility we had. There
3 was no indication that local communities would
4 be able to opt out if in the end of this
5 process they decided they wouldn't go forward.

6 So, of course, they were furious,
7 but that doesn't mean that the process
8 shouldn't look at good geology in Vermont or
9 New Hampshire if it's there and if communities
10 have the right to opt out in the end.

11 MR. KAMPS: I'm glad you raised
12 the opt out. I think an absolute veto by any
13 potential host is a necessity, and that was
14 another flaw of the Yucca Mountain decision --
15 was that Congress had the ability to override
16 Nevada's veto.

17 MEMBER MACFARLANE: Now, did --
18 so, a question here. Are we talking about --
19 when you said a veto is essential, a veto for
20 whom? A veto for the town, a veto for the
21 county, a veto for the state, a veto for
22 everybody? Because if you let --

1 MR. KAMPS: That's a very good
2 question. How do you define consensus?

3 MEMBER MACFARLANE: Exactly.

4 MR. KAMPS: Who is consenting to
5 this decision?

6 MEMBER MACFARLANE: Exactly.

7 MR. KAMPS: I mean, when you
8 invite tribal governments who are in favor of
9 a dump site on their land, that does not
10 represent the traditionals of the reservation.

11 It does not represent the
12 environmentalists, and every single one of the
13 scores of Native American reservations that
14 have been targeted for these centralized
15 interim storage sites have stopped it in the
16 end because the people on the reservation were
17 opposed, even though their tribal governments
18 may have been in favor. They've all been
19 stopped.

20 CHAIR HAMILTON: Excuse me. You
21 wanted to finish your -- I didn't mean to
22 interrupt your --

1 MR. KAMPS: They've all been
2 stopped by the people who live on the
3 reservations despite the tribal government's
4 support for the proposal.

5 CHAIR HAMILTON: I'm afraid our
6 time has expired for this session. We thank
7 you very much. I wanted to ask a couple of
8 clarification -- you handed me this petition.

9 MR. KAMPS: Yes.

10 CHAIR HAMILTON: Do you know the
11 total number of signatures there?

12 MR. KAMPS: It's over 3,300.

13 CHAIR HAMILTON: 3,300?

14 MR. KAMPS: Individual signatures.

15 CHAIR HAMILTON: Then you said in
16 your statement that you are speaking, I think,
17 for 167 groups?

18 MR. KAMPS: That's correct.

19 CHAIR HAMILTON: How many people
20 would be represented by those groups?

21 MR. KAMPS: We didn't add it up,
22 but depends on the groups. Some of the

1 national groups represent hundreds of
2 thousands of people.

3 CHAIR HAMILTON: I see, so it's a
4 very --

5 MR. KAMPS: Each.

6 CHAIR HAMILTON: -- large number.
7 Several hundred thousand would be a fair
8 statement?

9 MR. KAMPS: That's a conservative
10 estimate, yes.

11 CHAIR HAMILTON: Well, we thank
12 you very much for your presentations this
13 morning, and we now move to the second
14 speaker.

15 MR. KAMPS: Thank you.

16 CHAIR HAMILTON: We'll hear next
17 from Dr. Hank Jenkins-Smith of Oklahoma
18 University. Dr. Jenkins-Smith is a professor
19 of political science and is the associate
20 director of the University Center for Applied
21 Social Research.

22 He's an expert in public opinion

1 measurement and the politics of risk
2 perception and is here with us today to
3 discuss the findings of his research into
4 public attitudes towards nuclear waste.

5 Dr. Jenkins-Smith, thank you very
6 much for coming, and you may proceed.

7 DR. JENKINS-SMITH: Thank you,
8 sir. It's an honor to be here. The research
9 that I'm going to be presenting for you is
10 based on a fairly large group of individuals
11 at the University of Oklahoma.

12 This research has been going on
13 really since about 1992 funded by a number of
14 sources, the University of New Mexico, Texas
15 A&M University, University of Oklahoma, Sandia
16 National Laboratories, and the National
17 Science Foundation.

18 Some of these data are going to
19 reach back pretty far. Others are more
20 recent. If we could go to the first slide
21 first please, or do I have the clicker?

22 Yes. Here's what I want to

1 address. I want to give a little bit of
2 context, talk a bit about public beliefs about
3 used nuclear fuels, examine preferences for
4 current and alternative used nuclear fuel
5 options, and then get into what I think is
6 probably the most important part of this,
7 which is policy design variations and the
8 effect that that has on the way that the
9 American public responds to siting debates,
10 and finally get it to the question of
11 proximity if we have time.

12 I'm not quite sure how to advance.
13 When you measure policy views on complex
14 issues like this, you get into some really
15 tricky terrain. The reason is that the
16 considerations are enormous on both sides of
17 an issue of this kind, and measuring public
18 perceptions requires putting people in the
19 context that they would be in if they were in
20 the middle of a debate of this sort.

21 So, asking questions about used
22 nuclear fuels requires being able to put the

1 arguments of various points of view on the
2 table and to what -- and to measure these in
3 a stable way, one that actually replicates
4 what happens when a policy debate is thick
5 around an individual, requires mapping out the
6 kinds of arguments that are being made by both
7 opponents and proponents in something that
8 looks like the pattern that takes place in the
9 press.

10 So, it's challenging, and it means
11 you can't ask really simple questions of
12 yes/no variety or the kind that you see in
13 newspaper polls. The result is you really
14 have to do a careful design.

15 You have to provide a format for
16 people to answer in a considered, deliberative
17 format. We do this in our Energy and
18 Environment Survey Project through nationwide
19 annual surveys.

20 The pattern that you'll see today
21 we've been engaged in since 2006. For the
22 most recent and the next year's focus, we're

1 looking really at nuclear waste in particular,
2 looking at the policy options and their
3 variations, but the base questions have been
4 consistent over time.

5 Now, to do this is tricky. To get
6 out the American public is no longer so easy.
7 It used to be that you could rely on telephone
8 surveys to do this, but there's an increasing
9 fraction of the population who don't have
10 fixed phone lines, you can't talk to them on
11 a cell phone because they'll get in a car
12 crash when they answer you, so we have to do
13 a mixed-mode survey with both internet and
14 telephone to really get at the breadth of the
15 American public.

16 We then try to make sure that we
17 are capturing the breadth of the American
18 demographics in doing this in order to get at
19 a reasonably representative sample of the
20 public. I just want you to know that this is
21 very challenging, and anybody who says they
22 have a simple way to do this is fibbing.

1 As a result, when you look at
2 these kinds of results, you really do need to
3 consider the way that the data are collected.

4 I want to show you here some
5 context variables. We were just -- we just
6 heard some very eloquent presentations on the
7 way to think about risks of energy sources,
8 and this is the way the American public now
9 think about the risks posed by fossil fuels,
10 nuclear energy, and renewable energy.

11 This is just asking about risks,
12 but note that the perceived risks of nuclear
13 energy and fossil fuels are roughly equivalent
14 and have been for some time.

15 Both are trending down slightly,
16 which happens when economic concerns rise.
17 You get shifts in the way people think about
18 relative risks with renewables essentially
19 bouncing around at much lower levels, and that
20 -- I mean, so don't make the mistake of
21 thinking that the American public don't
22 perceive risks from nuclear energy.

1 Next slide please. The balance,
2 however, of considerations takes into account
3 risks and benefits. We've -- in the nuclear
4 domain, we've tended to focus on what the
5 perceived risks are and argue about how small
6 they may be, but the fact is that the
7 considerations that inform public positions
8 have as much to do with the perception of
9 benefits as they do with risks.

10 One more click, please. The most
11 important thing driving attitudes about
12 nuclear energy is their domestic source. The
13 American public is very sensitive to imports
14 and reliance on imports of fossil fuels, crude
15 oil in particular, and when I look at the
16 relationships between benefits and risks, the
17 thing that rises to the top for the American
18 public is having a domestic reliable source of
19 energy that doesn't get us into foreign
20 adventures.

21 Interestingly, when you think
22 about benefits here, the American public is

1 not weighing carbon emissions when they think
2 about the benefits of nuclear energy. It
3 comes down at the bottom of the list because
4 there's real dissent in the United States
5 about carbon emissions, and I'll show you
6 another point in a moment about the way that
7 carbon emissions are understood with respect
8 to nuclear energy, but the biggest risk
9 understood for nuclear energy parallels very
10 nicely to discussions we just heard.

11 The American public are very
12 worried about terror strikes on existing
13 plants, and that's the top fear. The very
14 bottom fear has to do with nuclear
15 proliferation and plutonium production, so you
16 can begin to understand how on average people
17 are putting together the pattern of beliefs
18 that they hold about these things.

19 Next slide please. That context
20 tells you a little bit about how people are
21 understanding the role of nuclear energy in
22 the future. I'm just going to summarize that

1 by looking at the support for additional
2 reactors.

3 You can see there's a slight
4 difference between support for reactors at
5 existing sites and new sites. It's been
6 growing. This parallels the research that's
7 done by many other groups.

8 We ask these questions in
9 precisely the same fashion each time so that
10 the changes really -- you're representing
11 changes in underlying attitudes rather than
12 variations in questions.

13 But, note that we're still fairly
14 close to the middle of the scale. This is not
15 -- I mean, what that represents is the central
16 tendency in a distribution of attitudes, and
17 so there's a -- there isn't what you would
18 call strong consensus here, though the central
19 tendency is clearly leaning in the direction
20 of increasing the number of reactors in the
21 U.S.

22 Next slide please. I want to now

1 to get to public beliefs about used nuclear
2 fuel, and let me preface this by saying that
3 you can't think of attitudes about nuclear
4 energy or used nuclear fuel as isolated bits
5 of thoughts in people's heads. They're
6 connected to belief systems.

7 Underlying core values,
8 expectations about the world, who people
9 trust, a whole variety of beliefs about the
10 way nature works, and I want to show you just
11 some pieces of that so that you can -- I want
12 you to understand that the attitudes about
13 used nuclear fuel are not isolated.

14 They're part of a woven fabric of
15 beliefs that people have that are consistently
16 related. You may disagree with parts of why
17 people believe what they do, but you can't
18 move them around very easily without moving a
19 lot of other stuff.

20 Okay. Next slide. We've asked a
21 variety of questions over time about what
22 people think about nuclear issues and nuclear

1 waste. The top question we're asking
2 specifically about the operation of a nuclear
3 power plant and greenhouse gas emissions.

4 We ask this in part because we're
5 trying to understand the carbon debate that's
6 going on and you can see that we have
7 essentially equal numbers of the American
8 public agreeing and disagreeing with the
9 question of whether a normally operating
10 nuclear power plant is producing significant
11 quantities of greenhouse gas.

12 This is why, in part, in the
13 American public you don't have a lot of
14 support for nuclear energy that stems from the
15 carbon debate and climate change issues as the
16 connection hasn't happened.

17 That's a gear that doesn't mesh
18 and that debate I expect to continue. We've
19 seen actually declining public expectations.
20 The greenhouse gas emissions are, in fact, of
21 human origin or that they have any
22 significance for environmental concerns.

1 This is a fascinating change of
2 views, but it's related to underlying core
3 values that people bring to the specific
4 policy questions.

5 Spent nuclear fuel can
6 accidentally explode like a nuclear bomb.
7 Now, any engineer knows how difficult it would
8 be to have that happen, I mean, and all of the
9 things that are necessary to generate a
10 nuclear explosion.

11 Forty percent of the public think
12 that that's -- they agree with that position.
13 The suntan question we ask in order to
14 understand something about perceptions of
15 ionizing radiation and then the dose question.

16 Now this is -- this should be a
17 dead giveaway in the sense that the dose is
18 the same, but 48 percent of the American
19 public think that manmade radiation, even with
20 the consistent doses, is worse -- more toxic
21 than is naturally occurring radiation.

22 You know where this stuff comes

1 from. You all are a bit familiar with popular
2 culture and the way that the ideas are
3 presented, but they become part of the fabric
4 of beliefs that exist out there. I mean, you
5 all watch The Simpsons and Spiderman and all
6 the rest.

7 Next slide, please. Now, the
8 beliefs that are up there are very much
9 associated with attitudes about things
10 nuclear. I'm simply showing you, if I score
11 these in the sort of more nearly technically
12 correct direction, what happens is the number
13 of correct answers goes up.

14 The top line in that bottom chart
15 is the perceived -- if the mean perceived risk
16 of nuclear energy. For those that get one or
17 two right, it's about perceived risk are about
18 a seven on that zero to ten scale, and it
19 drops to about four for people who answer
20 these in the more nearly technically correct
21 direction.

22 Same thing -- same pattern with

1 the energy benefits index. Benefits rise
2 substantially the more that these perceived --
3 these questions are understood in the more
4 nearly technically correct direction. Mean
5 support for additional nuclear generation.

6 Now, I show you these simply to
7 reinforce this point, and that is that beliefs
8 about things nuclear are woven together in a
9 way that you have to worry about if you're
10 trying to change a view over here, it's
11 connected to a lot of other perceptions that
12 also have to change.

13 This is why telling the public,
14 teaching the public the truth, convincing them
15 of the appropriateness of a particular policy
16 is so hard. It's like turning a supertanker
17 and you collide with all kinds of other
18 beliefs and perceptions.

19 So, there's no panacea in
20 educating the public, which I hear so often in
21 technical communities. It's -- because public
22 belief systems themselves are thick and rich

1 and connected and anchored.

2 Next slide please. Now, in this
3 context, what do people think about what we're
4 doing with spent nuclear fuel now? We've been
5 charting since 2006 what people think is
6 happening with spent fuel currently.

7 We provide these options, and you
8 can see what's happened over time is gradually
9 there's a dawning awareness that it's onsite,
10 but this tells you something important about
11 public opinion, as well, and that is that as
12 policy debates develop and issues get on the
13 table, greater fractions of the public
14 understand what's going on.

15 It's a maturation process in a
16 policy debate and we're in the fairly early
17 stages of maturation on this debate.

18 Next slide, please. We also ask
19 questions about whether there's spent fuel
20 stored onsite in the state of the respondent.
21 This is after informing them chiefly that this
22 is where this storage happens.

1 Twelve percent of our respondents
2 are able to correctly say whether they're
3 state does or does not have spent fuel stored
4 onsite. Again, the point is that we're early
5 in this debate. There will be changes in
6 these kinds of questions as you see from the
7 top slide, but we are not dealing with a well-
8 informed public on these questions now.

9 Next slide, please. I want to
10 turn now, one more hit, to preferences for
11 current and alternative used nuclear fuel
12 policy options. I want to remind you that
13 when you ask questions like this, what you
14 have to do is design the question wording so
15 that you capture the primary arguments that
16 are going to surround the policy position in
17 a public debate.

18 It's a craft job. This is where
19 science and art have to come together, and you
20 really have to be careful with how you do
21 this. It turns out that many of these
22 questions are quite stable.

1 Question wording does not
2 massively alter the pattern of response, so I
3 will -- I'm reasonably confident that these
4 results will hold over time.

5 So, the first question is about
6 support for continued onsite storage for the
7 foreseeable future, which is the way the
8 phrasing has recurred a great deal. We
9 explain a bit to the respondent about how
10 storage works in pools and in dry cask.

11 Then we describe a supporter and
12 an opponent point of view on this, and I'm not
13 going to labor through that, but these are all
14 on the website and can be seen.

15 The pattern of public support for
16 this, with one more click, is distributed.
17 Again, it represents the fact that we're early
18 in this debate. Note that the mean is toward
19 opposition to continued onsite storage when
20 they hear the arguments from both sides on
21 this policy debate.

22 Note that mean of a 3.6 on a 0 to

1 7 scale. That means they're below average,
2 below neutral on this question, but the
3 central tendency is still in the middle.

4 Next slide, please. We can
5 compare that with preferences for numbers of
6 permanent storage sites, and I'm going to
7 begin walking through features of potential
8 repositories and showing you what happens to
9 public support as you vary them.

10 Here, we were simply looking at
11 the modal options that we -- that are being
12 discussed broadly in policy communities. One
13 is to construct six to eight regional storage
14 sites. The other is two large centralized
15 storage sites, one in the East, one in the
16 West, to see whether the number of sites
17 actually influences the way people's initial
18 support would look.

19 Next. You can see here that the -
20 - having six to eight regional storage sites
21 generates somewhat more support than does a
22 centralized repository. Note that both of

1 these are substantially -- have substantially
2 more support and statistically significantly
3 more support than does the onsite storage
4 option.

5 So, the initial starting point is
6 people really are leaning in the direction of
7 wanting some kind of repository system.

8 Next slide, please.

9 MEMBER SHARP: Do you see that as
10 a significant difference from your --

11 DR. JENKINS-SMITH: It's
12 statistically significant and in the case of
13 the difference between onsite and the multiple
14 regional, that's substantively significant.
15 You're really moving a policy --

16 MEMBER SHARP: Right. Right, I
17 can see that --

18 MEMBER HOLLOMAN: -- scale.

19 MEMBER SHARP: -- but I didn't
20 know whether we really would want to make
21 policy around -- draw a conclusion around that
22 difference on the regional or multiple site

1 versus --

2 DR. JENKINS-SMITH: Could you
3 raise that question when I kind of walk
4 through this because you're getting right at
5 the heart of the thing, and that is what do
6 you do with information of this kind? And I
7 love that question.

8 Okay. Another feature is the
9 retrievability versus permanent disposal
10 question, and of course, this one is crucial -
11 - has been crucial in Europe in a number of
12 the debates there.

13 This came up for me a great deal
14 in focus group work where I'm having one-on-
15 one, in-depth discussions with eight to ten
16 people randomly drawn from local publics in
17 which the question came up of what are we
18 doing putting in deep geologic storage?

19 Would we be able to get into it
20 and deal with it if there's a problem? One of
21 the things that recurred significantly in
22 those discussions was the idea that it may be

1 hamstringing future generations rather than
2 helping them to make this -- these
3 irretrievable storage facilities, and as a
4 result, we've been asking a question about
5 retrieval and we basically talk about the
6 different options and the pros and cons that
7 are raised in general debate about this.

8 The retrievable option garners
9 substantially more support. Now, from the
10 focus group discussion, again, what we were
11 seeing here were several features. One was
12 simply knowledge.

13 The idea in the public -- people
14 would do things like say, "Well, you know, we
15 didn't even have microwaves when I was a kid."

16 What they're basically getting to
17 is the idea that there's technological change,
18 new learning that takes place, and maybe even
19 new social values that might change the way
20 one thinks about those materials.

21 This is quite contrary to the
22 initial take with Yucca Mountain, which was

1 you want to permanently seal the stuff away
2 chiefly driven by the non-proliferation types
3 of argument. This -- there is a disjoint
4 between the dominant public attitudes on this
5 and the way policy has been engaged.

6 Next slide, please. Reprocessing.
7 We've heard a lot of discussions about
8 reprocessing. This one's a tricky one to get
9 to because, as you know, people have played
10 with this idea calling it recycling and
11 dressing it up in different ways to try to
12 effect public response to it, which basically
13 doesn't make much difference.

14 I mean, when people think about
15 this question, the responses are fairly robust
16 to the kinds of words that you use to describe
17 it. You do have to get out issues like the
18 generation of plutonium, which can be used to
19 make nuclear weapons.

20 You have to make sure that when
21 you're getting people to think about
22 reprocessing they're addressing the real

1 issues that are involved. You can elaborate
2 this, which makes it more challenging to do in
3 a survey setting, but with a basic
4 description, you get a substantial tilt in
5 favor of retaining the prospect for
6 reprocessing.

7 Most people say we don't -- they
8 aren't saying they want to reprocess now.
9 What they're saying is that they expect
10 evolution over time of understanding, and they
11 want to retain the possibility of
12 reprocessing.

13 Next slide, please. Storage
14 depth. Now, there's big differences in what
15 we can do here. We can leave it at the
16 surface in hardened sites. We could construct
17 mine-like repositories several thousand feet
18 deep, or we could go with deep borehole up to
19 three miles deep and put it in bedrock.

20 We were interested in
21 understanding how people thought about that.
22 Remember, we're in the early stages of the

1 policy debate, but the responses look like
2 this. The mines win by a fair margin.
3 Surface storage sites and boreholes are
4 roughly equivalent in the public mind.

5 Deep borehole, we asked this
6 question in May. This was not long after the
7 deep borehole in the Gulf issue came up.
8 That's actually remarkable to me that the
9 support was this high given all of the
10 discussion that had been going on about deep
11 well drilling and the problems that were
12 associated with it.

13 I point this out to you to
14 suggest, first off, that the idea of mines
15 plays back to the question of retrievability,
16 that it's seen as maintaining the prospect for
17 future generations to be able to take -- make
18 their own choices, but it's not seen as risky
19 as surface storage.

20 Next slide, please.

21 MEMBER LASH: It's just so
22 striking that most of the answers were, well,

1 sort of the middle.

2 DR. JENKINS-SMITH: Yes, correct.

3 The only one that's different is the mines
4 option where you don't have a mode in the
5 middle, which is intriguing to me now given
6 that the deep geologic has been so much a part
7 of the debate for such a long period of time.

8 One could've anticipated that the
9 discussion of deep geologic storage would've
10 pushed people away from that option. Well, it
11 hasn't. I suppose that's the main message
12 from that slide.

13 Let's talk about policy design
14 variation and public preferences. Next slide,
15 please.

16 The -- when you think about a
17 policy, no policy is a single thing. It's
18 like any other good, broadly construed, that
19 you think about that's got multiple
20 attributes.

21 The Yucca Mountain bundle of
22 attributes was an interesting one. It was --

1 first off, it was a decide, announce, and
2 defend -- the screw Nevada kind of -- the
3 screw Nevada act kind of a policy, which was -
4 - generated its own enormous hurdles for this
5 policy.

6 It was also a once-through system
7 meaning that the material was declared a waste
8 of no benefit, but of substantial risk. It
9 was a permanent disposal only, no other
10 options considered policy.

11 Now, that bundle meant that when
12 you went into communities to talk about the
13 storage of that facility, that's -- that was
14 like the goal posts that were in the policy
15 debate. So, people who wanted to argue for or
16 against this were constrained by those
17 features of the attributes of the policy
18 domain.

19 There's -- and so, it's not
20 surprising that the debate had to focus on how
21 small can we make the risk. Right? Because
22 there weren't any offsetting features that

1 really mattered. So, the whole of the debate
2 focused round and round on how small can you
3 make the risk.

4 Now, in a policy debate, when the
5 risk is the central feature, risk is going to
6 dominate people's considerations, and it's
7 very, very difficult. You know, it's not
8 impossible to do siting with that type of a
9 bundle of attributes, but it's very
10 challenging. What you're doing is you're
11 making it a very steep hill to climb.

12 CHAIR HAMILTON: Dr. Jenkins-
13 Smith, I'd ask you to wrap up here so we'll
14 have some opportunity for questions.

15 DR. JENKINS-SMITH: Yes, sir.
16 Next slide, please. The first -- what I've
17 done here is I've set up an experiment in
18 which I varied the features of the policy
19 bundle, and I've used two different bases.

20 One is the two underground mine
21 repositories, the other is the deep borehole
22 option; randomly assigned people to each of

1 these groups, and I'm simply looking here at
2 what effect it makes when you change the
3 features of the repository to include other
4 attributes.

5 Next slide. Now, just as a
6 starting point, if you fully describe the
7 policy options, you get a distribution that
8 looks something like this with some
9 opposition, a lot of neutrality, and some
10 significant support for either of these
11 options.

12 Next slide. The design options
13 really are an attempt to see what happens to
14 people who previously supported, were neutral,
15 or opposed that site if you add features to
16 the policy.

17 This is co-locating a research
18 laboratory. One of the things that our focus
19 groups indicated was that people liked options
20 that offset what they saw as the negative
21 features of the site.

22 A research laboratory that's

1 designed to reduce risks in the future and
2 think about better ways to handle these
3 materials is one of those things that directly
4 addresses the underlying worries.

5 So, we added co-locating a
6 research laboratory, and you can see on that
7 top slide what happens. Focus on the neutral
8 and oppose columns within each of the two
9 options.

10 Half. Half of those who initially
11 opposed the facility said their support for
12 the site would increase if it was more than
13 just a repository. If it was also a center of
14 research and learning for addressing the very
15 problems the repository was created to
16 address.

17 That's a very robust finding. I
18 did that experiment, as well, in the mid-1990s
19 in Nevada at the heat of that policy debate
20 when 77 percent of the respondents opposed the
21 Yucca Mountain site.

22 When asked how their view of Yucca

1 Mountain would change if it was also a
2 national laboratory focused on addressing
3 these risks, then you got half of those
4 opponents saying that they would increase
5 their level of support for the facility.

6 So, it's not time-bound. It
7 actually operates in the thick of a debate
8 with people who are addressing that kind of
9 question. Co-locating reprocessing facilities
10 have the same feature.

11 Next slide, please. Compensation
12 is another --

13 CHAIR HAMILTON: Dr. Jenkins-
14 Smith, we only have about seven or eight
15 minutes --

16 DR. JENKINS-SMITH: Yes, sir.

17 CHAIR HAMILTON: -- and we would
18 like to have some time for questions.

19 DR. JENKINS-SMITH: I'll finish
20 with this slide.

21 CHAIR HAMILTON: Can you wrap it
22 up very quickly?

1 DR. JENKINS-SMITH: I'll finish
2 with this slide --

3 CHAIR HAMILTON: Okay.

4 DR. JENKINS-SMITH: -- simply
5 showing that compensation has a similar
6 feature although those who initially oppose
7 the facility are not so responsive to funds to
8 the state for the facility.

9 The final point on this is that
10 the bundle of attributes matters, that it's --
11 that you really have to think about what
12 you're asking the local community to accept
13 and that the public are responsive to varying
14 that policy design. I'll finish with that
15 point.

16 CHAIR HAMILTON: Thank you very
17 much, Dr. Jenkins-Smith. We have about eight
18 minutes now before the break time, and we have
19 a full schedule the rest of the morning.

20 We'll start with Per then do
21 Allison then to Vicky, okay? That may be all
22 we can handle. Okay.

1 MEMBER PETERSON: Dr. Jenkins-
2 Smith, thank you. This is very interesting,
3 and of course, one wishes you could just run
4 a whole bunch of additional sets.

5 The thing I'm interested in is
6 that in the United States we have both defense
7 high-level waste and spent fuel.

8 DR. JENKINS-SMITH: Yes, sir.

9 MEMBER PETERSON: The defense
10 high-level waste one can convincingly argue is
11 a waste with no potential future value. The
12 spent fuel we don't know today. I'm
13 interested in the question if one were to
14 propose that disposal can be safer if it is
15 made irretrievable because you optimize for
16 that purpose, and if one were to prioritize
17 disposal initially to defense high-level waste
18 and therefore, while you're doing that
19 activity, defer the question about retrieval
20 for spent fuel, how would that fit in sort of
21 a policy option with respect to things that
22 you've learned around desires for

1 retrievability and also the desires about
2 maintaining the option for reprocessing?

3 DR. JENKINS-SMITH: You raise a
4 very interesting question. There's two sides
5 to the defense waste. One, it's a national --
6 the benefit from defense is a national issue.
7 It's one of those questions that in New Mexico
8 mattered because that was defense waste at the
9 WIPP site.

10 With respect to your question
11 about permanent disposal, I suspect that under
12 those circumstances, if people believe that
13 there was really no future use for this and
14 that it was safer in deep disposal that you
15 would get a positive response to that.

16 I haven't asked that question.
17 That's something that would certainly be a
18 candidate for future research, but I suspect
19 you'd get support for a mixed system or some
20 irretrievable disposal took place along with
21 some retrievable and that you could
22 differentiate.

1 CHAIR HAMILTON: Allison and then
2 Vicky.

3 MEMBER MACFARLANE: Thanks. I
4 find some of this valuable and some I'm a
5 little -- I'd like to add a cautionary note on
6 it. I think your statement about you don't
7 think that we can educate the public out of
8 their -- out of what we perceive this to be
9 their problem is a valuable one, but I would
10 caution us about the reprocessing questions
11 that you've posed here.

12 Where you've looked at
13 reprocessing in particular, I don't think
14 you've captured the debate properly at all.
15 I think you heard very eloquently this morning
16 what the debate is in large part, and that is
17 not captured at all in your question that you
18 pose here in one of the slides.

19 DR. JENKINS-SMITH: Could I just
20 interject that that is just a piece of -- I
21 couldn't fit it all on the slide --

22 MEMBER MACFARLANE: Okay.

1 DR. JENKINS-SMITH: -- without
2 creating --

3 MEMBER MACFARLANE: Well, I'd be
4 interested to see the longer thing whether you
5 actually talked about environmental impacts,
6 large stockpiles of plutonium, costs
7 associated with this.

8 In France and in the U.K. and in
9 Ireland, the debate has largely been about
10 both water-borne and airborne radioactivity
11 releases from reprocessing facilities.

12 DR. JENKINS-SMITH: Right.

13 MEMBER MACFARLANE: It's been an
14 international issue for the Irish, in
15 particular. I wonder whether in other
16 questions that you've posed about reprocessing
17 that whether you are actually assuming that
18 reprocessing does not equate with risk, but
19 actually some people view reprocessing as
20 increasing the risks over direct disposal.

21 So, I would put a cautionary note
22 into a lot of this data.

1 DR. JENKINS-SMITH: It's a really
2 good point, and all of these questions could
3 be unfolded further. The question, though,
4 that you have to ask in the design phase is
5 which features you're going to add.

6 You could put a treatise in there
7 and then it's difficult to field in a setting
8 like this, but your points are extremely well
9 taken and very nice.

10 CHAIR HAMILTON: Okay, Vicky.

11 MEMBER BAILEY: Thank you,
12 Dr. Jenkins-Smith. I found your presentation
13 extremely interesting. I have a couple of
14 clarifying questions and then just an overall
15 question to ask you.

16 On your slide on implications of
17 design options --

18 DR. JENKINS-SMITH: Yes?

19 MEMBER BAILEY: -- you saw a
20 support increase. Was this an intellectual
21 response or because of additional -- they saw
22 additional benefits to the community?

1 DR. JENKINS-SMITH: The latter.
2 Again, the focus group work that I was doing
3 had to do with a emotional issue that comes up
4 in a policy debate of this kind, and that is
5 that if you put -- if you have a community
6 that is considering a repository and all of
7 the features of that repository are about risk
8 and minimizing a risk, it's very difficult for
9 them to put themselves in a position of saying
10 that they would be willing to undertake this
11 for some larger benefit to society.

12 By the kinds of statements that
13 were being made in those focus groups were
14 about give us a reason. What possible reason
15 would we want to take that? If I thought that
16 it was going to be a benefit to future
17 generations and I could argue that we were
18 carrying the burden for larger national well-
19 being, then I could support this.

20 I could intellectually hold my
21 head up or emotionally hold my head up in a
22 discussion with my neighbors about why we

1 maybe ought to do this, but if all they're put
2 in the position of doing is talking about how
3 small the risk is, it's very difficult.

4 You put them on -- in an
5 interesting spot in trying to develop their
6 own support for a facility of that kind and
7 that's the -- that's been the characteristic
8 of the policy debate as it's been waged
9 particularly in Nevada.

10 The things that we were asking
11 Nevadans to do were not things that they could
12 be proud of.

13 MEMBER BAILEY: Okay. On this
14 implications of compensation, how do you
15 define compensation?

16 DR. JENKINS-SMITH: In this case,
17 we took one of the many options that's being
18 discussed and we said compensation would be in
19 the form of -- for states at the state level
20 for those host states that would receive
21 approximately \$1 billion in aid for schools,
22 roads, and hospitals.

1 There, obviously, are many, many
2 ways to define that. We were just taking an
3 initial shot to understand how compensation in
4 general would be viewed.

5 MEMBER BAILEY: So, actual
6 dollars?

7 DR. JENKINS-SMITH: Yes.

8 MEMBER BAILEY: Actual additional
9 revenue to the state --

10 DR. JENKINS-SMITH: Correct.

11 MEMBER BAILEY: -- community to do
12 something with, to --

13 DR. JENKINS-SMITH: Correct.

14 MEMBER BAILEY: -- increase
15 goodwill. Okay. So, looking at these --
16 looking at your presentation and these couple
17 slides, so is there feasibility? Is there an
18 opportunity to then think that we might have
19 some voluntary communities around this issue?

20 DR. JENKINS-SMITH: I suspect
21 there is, if you allow the communities to have
22 some input into the features of the facility

1 that is going to be considered for their area.
2 There will be strident opposition, as well, so
3 the consideration is going to take place over
4 the course of many iterations of a policy
5 debate where the downsides are going to be
6 emphasized as well as the upsides.

7 The key feature is, if you want a
8 facility to be siteable, there have to be
9 upsides -- and not just jobs. Jobs doesn't
10 work nearly as well as providing somebody with
11 a value-based orientation to say, I can see
12 myself supporting this because it does some
13 good for people beyond me.

14 MEMBER BAILEY: Right.

15 DR. JENKINS-SMITH: If it's all
16 about money, then -- I mean, a lot of the work
17 that's been done shows that that works in the
18 reverse. It becomes blood money --

19 MEMBER BAILEY: Okay.

20 DR. JENKINS-SMITH: -- especially
21 for people who are initially skeptical of the
22 site. If you add funds, then all of the

1 sudden it looks even worse to them.

2 MEMBER BAILEY: It looks more like
3 a bribe.

4 DR. JENKINS-SMITH: That's
5 precisely right.

6 MEMBER BAILEY: Okay. I guess
7 that's what I wanted to hear you say. I
8 thought it was just fascinating what you were
9 showing here, but, obviously, that's what
10 we're grappling with, so --

11 DR. JENKINS-SMITH: Yes, ma'am.

12 MEMBER BAILEY: -- thank you.

13 DR. JENKINS-SMITH: Yes.

14 MEMBER BAILEY: Thank you.

15 CHAIR HAMILTON: Okay. The final
16 question will be Richard.

17 MEMBER MESERVE: I was sort of
18 fascinated by your slide about the balance of
19 nuclear energy risks and benefits, and you
20 correlated it with a slide that shows the
21 importance of reducing dependence on foreign
22 energy.

1 DR. JENKINS-SMITH: Yes.

2 MEMBER MESERVE: I wondered
3 whether those were really connected. I mean,
4 we actually heard some testimony yesterday
5 from somebody who was arguing for a particular
6 kind of nuclear project to reduce oil.

7 DR. JENKINS-SMITH: Yes.

8 MEMBER MESERVE: Fact is, we don't
9 use oil for producing electricity in the
10 United States.

11 DR. JENKINS-SMITH: That's
12 correct.

13 MEMBER MESERVE: So, we don't save
14 foreign dependence by turning to nuclear. I
15 sort of wonder whether that's a question in
16 its relation to people's attitudes towards
17 nuclear is one that you probed --

18 DR. JENKINS-SMITH: Yes.

19 MEMBER MESERVE: Because that
20 seems to be another area where there's
21 considerable misunderstanding.

22 DR. JENKINS-SMITH: Yes. The

1 connection in the public mind is fairly tricky
2 on this one. However, they are seeing the
3 advertisements for the Volt and substantial
4 opportunity for ground transportation reliance
5 on electricity and other options.

6 So, in focus group work on this
7 when you apprise them to the fact that most of
8 the imports are for liquid fuels and not
9 easily replaceable with a great deal of our
10 base load electricity supply, they say, "Well,
11 you know, down the road we do expect to see
12 that type of change."

13 CHAIR HAMILTON: Vicky, final
14 question.

15 MEMBER BAILEY: Just one quick
16 follow-up in listening to Commissioner Meserve
17 and I forgot to pursue this earlier. When you
18 talk about the public, there are different
19 kinds of publics.

20 DR. JENKINS-SMITH: Oh, yes. Yes,
21 indeed.

22 MEMBER BAILEY: Is that not

1 correct? We talk about educating the public.
2 Is it important then for this commission and
3 in our report to -- when we address our --
4 address these questions and issues, how can we
5 address them to the public and public
6 concerns?

7 How would you differentiate the
8 public? What are the segments in which we
9 need to speak to on this issue?

10 DR. JENKINS-SMITH: Well, it often
11 comes down to the -- I mean, we use the term
12 stakeholder, which is a term I don't like
13 because it's really fuzzy --

14 MEMBER BAILEY: Yes.

15 DR. JENKINS-SMITH: -- and doesn't
16 really tell you anything. The public that I'm
17 addressing is the adult population over age 18
18 in the United States that has any access to
19 the internet or the telephone? So, it's a
20 very broad notion of the public.

21 In policy processes, however, a
22 crucial element are the organized interests

1 for who find these policy questions
2 sufficiently motivating that they will, in
3 fact, commit their time and resources to be
4 engaged.

5 Now, there's a plus to this.
6 These are people who really see themselves as
7 having a stake in the issue one way or
8 another. The problem is that they don't -- I
9 mean, they are often quite different than the
10 American public understood is the adult
11 population over 18 that actually can speak to
12 these questions.

13 So, I think you need to understand
14 both. I think in the policy process we need
15 to just grapple with the issue that there are
16 multiple publics and understanding these
17 results is different than understanding those
18 of organized interest groups.

19 It's possible to really get the --
20 to measure the distribution of attitudes in
21 both, but they are very different.

22 CHAIR HAMILTON: Dr. Jenkins-

1 Smith, we thank you for your very insightful
2 comments. You can tell by the questions there
3 is a lot of interest. Our time, however, is
4 expired.

5 After the ten-minute coffee break,
6 we'll return to hear Dr. Garrick on lessons
7 learned from U.S. and international repository
8 programs. We'll have a very brief discussion
9 period by the commissioners and then hear from
10 the public.

11 DR. JENKINS-SMITH: Thank you,
12 sir.

13 CHAIR HAMILTON: We stand in
14 recess for ten minutes. Thank you.

15 (Whereupon, the foregoing matter
16 went off the record at 10:05 a.m.
17 and resumed at 10:16 a.m.)

18 MR. FRAZIER: Are you ready,
19 General?

20 CHAIR SCOWCROFT: Yes, ready.

21 MR. FRAZIER: General Scowcroft.

22 CHAIR SCOWCROFT: Thank you. If

1 the Commission would come to order. Our final
2 presentation today will be from Dr. John
3 Garrick, the Chairman of the U.S. Nuclear
4 Waste Technical Review Board.

5 He's serves as chairman since
6 2004, and prior to that, Dr. Garrick served
7 for ten years on the U.S. Nuclear Regulatory
8 Commission's Advisory Committee on Nuclear
9 Waste.

10 He's a founder of the firm PLG,
11 Incorporated, from which he retired in 1997.
12 Dr. Garrick, the floor is yours.

13 DR. GARRICK: Thank you very much.
14 I want to thank the Commission for inviting me
15 here today to discuss some lessons learned
16 from U.S. and international waste disposal
17 efforts.

18 My name is John Garrick. I'm the
19 current chairman of the Nuclear Waste
20 Technical Review Board. There are four
21 members of the Board in the audience today, so
22 I have plenty of backup if I get in any kind

1 of a jam.

2 I know that two of your
3 subcommittees have heard from other board
4 members and staff, so I'm only going to very
5 briefly describe the Board and its role.

6 The Board is an independent
7 federal agency. It has 11 technical and
8 scientific experts. It is non-partisan and
9 apolitical. Members are appointed by the
10 president to four-year terms from a list of
11 nominees, nominations submitted by the
12 National Academy of Sciences.

13 By the way, I should mention that
14 former Congressman and current Commissioner
15 Phil Sharp played a pivotal role in crafting
16 an amendment that led to the Board's existence
17 in the 1987 amendments to the Nuclear Waste
18 Policy Act. I know also that Senator Domenici
19 played an important role in the passage of
20 that legislation.

21 The Board is charged with
22 conducting unbiased, ongoing technical peer

1 review of activities undertaken by the
2 Secretary of Energy related to the
3 implementation of the Nuclear Waste Policy
4 Act.

5 In particular, we assess the
6 technical and scientific validity of DOE
7 activities to manage and dispose of spent fuel
8 and high-level radioactive waste, which I lump
9 under the rubric of high-activity waste.

10 The law requires us to report our
11 findings, conclusions, and recommendations at
12 least twice a year to Congress and the
13 Secretary. I should establish at the outset
14 that the Board's statutory mandate continues
15 even as alternatives to a Yucca Mountain
16 repository are being considered.

17 The Board's current review work in
18 priority task reflect the transition of DOE's
19 nuclear waste management activities to include
20 potential fuel-cycle alternatives to direct
21 disposal of waste.

22 Let me list very briefly some of

1 the Board's current priority tasks. Since
2 June 2009, the Board has reviewed the
3 technical issues of long-term storage of
4 commercial-spent fuel. We're developing a
5 white paper on this subject that would be used
6 as a basis for our reviewing of DOE's research
7 related to extended storage of both commercial
8 and government-owned high-activity waste.

9 Another effort supporting our
10 ongoing review is a material balance
11 analytical tool called NUWASTE, which was
12 introduced to the Blue Ribbon Commission
13 reactor and fuel cycle technology subcommittee
14 last month by my Board colleague, Mark
15 Abkowitz.

16 The results provide important
17 insights on the potential benefits of
18 different back-end processes and activities
19 such as recycling of uranium and plutonium and
20 long-term storage of spent fuel.

21 To determine the technical effects
22 of how a delay in repository availability

1 affects the plans of federal facilities that
2 store government-owned, high-activity waste,
3 the Board has visited most of the facilities
4 where these wastes are stored. We plan to
5 issue a report early next year on our findings
6 and conclusions.

7 We are in the process of revising
8 the report we published a year ago that
9 presents information on the programs being
10 developed in other countries for managing
11 high-activity waste, and Board staff member
12 Dan Metlay presented the original report to
13 the Blue Ribbon Commission subcommittee on --
14 disposal subcommittee in July.

15 The revised report will be
16 extended to include a qualitative and
17 historical assessment of how the countries we
18 survey are going about developing their
19 geologic repository programs, and it will draw
20 some conclusions on how external factors have
21 impacted the repository program in those
22 countries.

1 Last, but far from the least, is
2 the Board's preparation of a report of
3 technical lessons learned from the U.S. and
4 repository programs worldwide. This report
5 will be made available to the Blue Ribbon
6 Commission when it has become finalized. Much
7 of the balance of my talk will be in
8 connection with that report.

9 First, however, the Board feels
10 compelled to express its support of the
11 opinion that's been voiced by many others that
12 regardless of the nuclear fuel cycle adopted,
13 a repository for permanent disposal of high
14 activity waste will be necessary.

15 In addition, I personally believe
16 that having a plan in place for permanent
17 disposition of the waste on which there is
18 agreement and a path forward is essential to
19 gaining public confidence in the nation's
20 ability to manage nuclear waste.

21 Right now I think we have a
22 temporary fix for a problem that very much

1 needs a permanent solution. Government-owned,
2 high-activity waste is being stored at several
3 federal facilities and commercial-spent
4 nuclear fuel is being stored at more than
5 100 nuclear power plants nationwide at over
6 70 sites.

7 The current inventory we've
8 already heard is about 60,000 metric tons of
9 heavy metal, and as we've also heard -- and
10 it's being added to it the rate of about 2,000
11 metric tons per year.

12 So, what is the solution? Well,
13 that's, of course, part of what the Blue
14 Ribbon Commission has been asked to consider.
15 The deep geologic disposal must be at least
16 part of the answer.

17 The objective of deep geologic
18 disposal is simply to isolate high-activity
19 radioactive waste from humans and the
20 accessible environment for durations that are
21 unprecedented in our history. Of course, this
22 is easier said than done.

1 Slide seven highlights some of the
2 challenges and complexities. With these
3 complexities and the resulting technical
4 challenges as background, what lessons have we
5 learned from the experiences of the Yucca
6 Mountain program and other repository efforts
7 that could help us achieve this important
8 permanent solution?

9 Every time I think or talk about
10 lessons learned or learning from experience,
11 I'm reminded of what President Truman once
12 said, "There is nothing new in the world
13 except the history you do not know."

14 The late, great nuclear pioneer
15 Walter Zinn several decades ago often pointed
16 out that many scientists and engineers
17 complain that there is too little data when,
18 in fact, the problem really, in most cases, is
19 that we seldom take advantage of the data
20 that's available.

21 So, in the spirit of President
22 Truman and Dr. Zinn, the Board has attempted

1 to capture some of the nuggets from what has
2 been learned during the last several decades
3 from disposal efforts in the U.S. and other
4 countries that might be useful in the future.

5 Because we know the U.S. program
6 from our own involvement, the Yucca Mountain
7 project provides the primary source of
8 information for our retrospective. Obviously,
9 we have learned much more about geologic
10 disposal than I can cover in a few short
11 moments, but let me give you a few examples.

12 First and foremost, the cumulative
13 experience of the Yucca Mountain program, the
14 Finnish, French, Swedish, Swiss, and the Waste
15 Isolation Pilot Plant program provides a high
16 level of confidence that deep geologic
17 repositories are, indeed, technically
18 feasible.

19 It should be noted that the
20 planned repositories for these programs and
21 the operating Waste Isolation Pilot Plant are
22 located in different geological environments,

1 including tuff, granite, clay, clay and
2 granite, and salt.

3 We learned to expect surprises
4 when you get underground during the site
5 characterizing phase so the sooner you go
6 underground, the better. Two examples of
7 surprises at Yucca Mountain were one, the
8 possible discovery of bomb-pulse chlorine-36
9 at the repository level, which if eventually
10 confirmed means that a small amount of surface
11 precipitation could reach the repository level
12 in just 50 years or less.

13 Two, the discovery of a repository
14 environment riddled with pockets. The
15 technical term is lithophysae ranging in size
16 from the diameter of your thumb to the
17 diameter of a basketball and larger, which
18 considerably complicated geotechnical and heat
19 transfer modeling.

20 Another example of a surprise is
21 that in the early days of the Waste Isolation
22 Pilot Plant characterization, experiments with

1 heat generating surrogates demonstrated that
2 the creep rate of the salt at higher
3 temperatures was far greater than had ever
4 been determined in the laboratory.

5 We learned that including a robust
6 engineered barrier system can have significant
7 advantages over a program that relies
8 primarily on what is referred to as the
9 natural system.

10 Because the materials and
11 manufacturing methods used for the engineered
12 barriers can be specified and controlled,
13 confidence in their predictability may be
14 greater than that of the natural system. Of
15 course, this assumes that the natural -- that
16 this environment in which the engineered
17 barriers would operate is understood.

18 The result can be much greater
19 confidence in the form, quantity, and rate,
20 that is the radiation source term, of
21 radioactive material from the disposed waste
22 entering the natural system.

1 We have learned a great deal about
2 the importance of analyzing the contribution
3 to overall risk of different waste farms. A
4 much-improved knowledge base now exists to
5 guide future efforts in specifying the most
6 appropriate waste farms for permanent
7 disposal.

8 A disposal facility involves many
9 first-of-a-kind systems and components for
10 which there is minimum experience. A
11 carefully planned and systematic program of
12 prototyping six systems and components in
13 their expected environments is essential to
14 understanding and modeling their potential
15 performance.

16 We learn how important it is to
17 have a waste package design that allows for
18 direct disposal of a variety of canisters,
19 including loaded dual-purpose canisters, to
20 minimize the handling of high-activity waste.
21 Waste handling is considered a significant
22 contributor to the risk of any high-activity

1 waste management system.

2 Major advancements were made in
3 the Yucca Mountain project on how to use the
4 risk sciences to quantify post-closure
5 performance over extremely long time periods.
6 An important spin-off of this work is the use
7 of phased and interactive probabilistic
8 performance assessments to tell you what you
9 should be doing in the characterization phase.

10 We learned how important it is to
11 implement a rigorous and integrative total
12 systems approach to characterizing a
13 repository site, developing a repository, and
14 designing and operating a waste management
15 system that involves such diverse activities
16 as transportation, storage, packaging,
17 handling and disposing.

18 It is important to know how
19 decisions made in each functional area of the
20 waste management system affect other parts of
21 the system, in particular, the impact of
22 decisions and design requirements having to do

1 with post-closure have to be traceable to
2 their impact on pre-closure activities
3 including waste handling and transporting and
4 the actual design and construction of the
5 surface facilities for the project to be
6 efficient in its operation.

7 We learned that it is essential to
8 have a close relationship between the science
9 program and engineering activities in such
10 projects to control costs, schedules and other
11 performance goals.

12 Experience indicates the
13 importance of making the transition from a
14 science program to an engineering project at
15 the right time.

16 Finally, experience tells us that
17 our license application in the U.S. can be
18 developed that meets the requirements of the
19 Nuclear Regulatory Commission for accepting a
20 license application to review. This was a
21 major achievement.

22 Now, experience in other countries

1 could become increasingly significant
2 depending on when the United States resumes
3 efforts to site and develop a deep geologic
4 repository.

5 Some findings from the experiences
6 of programs worldwide are repository systems
7 can be developed in a variety of geological
8 environments. There's lots of evidence to
9 that now.

10 Most proposed disposal concepts
11 rely on both natural and engineered barriers,
12 although the degree of reliance on one or the
13 other varies considerably. Research carried
14 out at depth in underground research
15 laboratories has been extremely valuable.

16 These are some of the lessons that
17 the Board learned from its review of different
18 high-activity waste repository programs,
19 although I have only had time to present them
20 at the highest level.

21 As I mentioned, I believe that
22 keeping the focus on a permanent solution is

1 critical regardless of what interim
2 alternatives to managing high-activity nuclear
3 waste are recommended.

4 The basis for this view is a
5 permanent solution is critical to building
6 public confidence that there is, indeed, a way
7 of isolating high-activity waste. I don't
8 think the public's convinced that this problem
9 can be solved.

10 History tells us that
11 institutional stability is not guaranteed
12 forever, and we're dealing with long-time
13 constants here. The longer the delay in
14 resuming a repository program, the higher the
15 probability that it could be disrupted during
16 the operational phase by institutional
17 changes.

18 An international scientific
19 consensus exists that a permanent geologic
20 repository is the preferred disposal option
21 and that it is technically feasible.

22 In closing, the following are -- I

1 believe the following's necessary for us to
2 move forward. Number one, an assessment of
3 repository development experiences to date
4 should be used as a baseline for future
5 geologic disposal programs. We have only
6 really scratched the surface. Site selection
7 and site characterization activities in the
8 U.S. would benefit from such an assessment.

9 Number two, characterization of
10 waste farms together with existing inventories
11 of high-activity waste should be revisited,
12 and the issue of the optimal method of
13 disposal for each waste farm should be
14 addressed. In other words, the one-size-fits-
15 all approach used at Yucca Mountain may or may
16 not be the best approach.

17 Number three, once a site has been
18 selected, characterized, and found suitable,
19 an engineering-oriented project plan for the
20 design, construction, licensing, and operation
21 of a geologic disposal facility for high-
22 activity waste should be developed.

1 At the same time, a scientific
2 research program that is tailored to the
3 requirements of the engineering plan and the
4 repository site selected should continue in
5 parallel both for better technical
6 understanding and identify potential
7 improvements to the engineering plan.

8 Okay. I hope that this brief
9 representation of some findings from the
10 Board's work undertaken as part of the review
11 of DOE activities has been useful. We look
12 forward to providing other technical
13 information to the Commission for its
14 deliberations, and of course, all of our
15 reports, correspondence, congressional
16 testimony, and meeting materials are available
17 on our website. I thank you, and I'm
18 available for questions.

19 CHAIR SCOWCROFT: Thank you very
20 much, Dr. Garrick, for a very useful and
21 helpful presentation. Questions? Allison?

22 MEMBER MACFARLANE: Great. Thank

1 you very much. That was very interesting. A
2 couple questions. One real quick one, you
3 said reducing waste handling should be a
4 priority of repository design that
5 accommodates the direct disposal of a variety
6 of canister types should be considered. What
7 do you mean by canister types? Materials,
8 different materials?

9 DR. GARRICK: Well, the waste is
10 shipped from the generator site in different
11 canisters.

12 MEMBER MACFARLANE: Right. Yes.

13 DR. GARRICK: They're not all the
14 same, and some canisters are used for both the
15 purpose of storage and the purpose of
16 transportation.

17 MEMBER MACFARLANE: Right.

18 DR. GARRICK: Of course, the
19 thought and the idea was to develop a waste
20 package --

21 MEMBER MACFARLANE: A multipurpose

22 --

1 DR. GARRICK: -- for the
2 repository that would accommodate multiple
3 canisters --

4 MEMBER MACFARLANE: Right.

5 DR. GARRICK: -- to avoid the need
6 to have to keep handling the material.

7 MEMBER MACFARLANE: Okay. At the
8 end, you said -- you talked about a -- we
9 should consider whether this one-size-fits-all
10 approach is not suitable. What do you mean by
11 that?

12 DR. GARRICK: Well --

13 MEMBER MACFARLANE: Do you mean to
14 imply that we need more than one repository
15 that we need a different repository for each
16 different kind of high-level waste or --

17 DR. GARRICK: I only make that
18 comment because we may want to consider
19 something like that. The whole issue is the
20 integrity of the waste farm under the
21 environment that you're going to put it in.

22 For example, in Yucca Mountain,

1 which has a high silica content, probably
2 borosilicate glass waste would be more
3 resistant than spent fuel.

4 On the other hand, if you're going
5 to put --

6 MEMBER MACFARLANE: Well, it has
7 nothing to do with the high silica content.
8 It has to do with the oxidizing environment.

9 DR. GARRICK: Well, that's true,
10 but the silica content does contribute to --
11 is more compatible with a glass-laced form
12 than it is with a --

13 MEMBER MACFARLANE: I think it has
14 to do with the oxidizing environment. I mean,
15 all rocks have a pretty high silica content.

16 Then, finally, there are lots of -
17 - you make lots of statements about the
18 ability of models to predict repository
19 performance, so I want to understand whether
20 you think that means the current method of
21 U.S. evaluation of repository, in other words,
22 the licensing decision is currently made based

1 on the results of this very complex and multi-
2 layered model, do you think that's reasonable
3 or should we consider alternatives?

4 DR. GARRICK: Well, I think my
5 main point there is to simply say that if we
6 keep recycling the performance assessment back
7 to the characterization program in the sense
8 of being able to expose just what it is to
9 quantify the performance, we're probably going
10 to make the characterization program much more
11 specialized to the needs of performance
12 assessment.

13 This was particularly true where
14 you have a situation where you have the kind
15 of coupled processes that you have in a
16 geologic disposal, the thermal, mechanical,
17 nuclear, and so on.

18 It isn't just a flow model. It's
19 much more complex than that, and the waste
20 farms become very critical with respect to
21 that.

22 CHAIR SCOWCROFT: Thank you.

1 Richard?

2 MEMBER MESERVE: Thank you, John.

3 I really very much appreciate your
4 presentation. I have a couple of questions,
5 as well. I know that you're familiar with the
6 academy that had argued for an adaptive
7 management approach --

8 DR. GARRICK: Right.

9 MEMBER MESERVE: -- recognizing
10 that there are lots of -- as you noted, there
11 are surprises and that you need to, basically,
12 a strategy of preserving options as best you
13 could until you really had to make decisions
14 and preserving optionality for as long as
15 possible.

16 You didn't explicitly endorse that
17 type of approach and it is a little bit
18 inconsistent with your statement about the
19 problems of institutional stability.

20 DR. GARRICK: The problems of
21 what?

22 MEMBER MESERVE: Of institutional

1 stability --

2 DR. GARRICK: Right.

3 MEMBER MESERVE: -- and
4 institutional capability to still be there, to
5 make the decisions. I wondered whether you
6 had -- you spent a lot of time on this subject
7 as to whether you had some views on the --
8 whether the adaptive management approach that
9 was advocated by the National Academies is
10 something that is -- should be an appropriate
11 strategy for this Commission to consider.

12 DR. GARRICK: Well, I think it
13 very much is. I think it goes back even
14 further than that academy study. The original
15 academy study on rethinking high level waste
16 had some of the same kind of elements to it
17 that this should be done very systematically
18 and very well-defined parts and it should be
19 designed -- the project should be designed in
20 such a way that the output from the previous
21 part can affect the succeeding part.

22 So, I think the phased approach,

1 and it really depends on what we mean by
2 phased approach or the adaptive approach is
3 absolutely critical because this isn't a case
4 where we have all the science we need when we
5 start. We're developing science as we go
6 along that is going to impact the engineering.

7 You need to have a project plan
8 that accommodates that, so I'm very much
9 supportive of an adaptive and phased approach.

10 MEMBER MESERVE: I'd like to ask a
11 question, a different that does pick up on a
12 point that Allison has made, I think, twice
13 this morning, which was that one of the
14 lessons perhaps we ought to learn from the
15 foreign experience is that if we were to think
16 of a new repository, we ought to think about
17 a reducing environment --

18 DR. GARRICK: Yes.

19 MEMBER MESERVE: -- rather than
20 oxidizing environment. I wondered whether the
21 NWTRB had taken a position on that and had
22 views on -- whether you have views on it?

1 DR. GARRICK: Well, I don't know
2 whether we've taken a position on it, but I
3 think that there's no question that what we've
4 learned is that the Yucca Mountain site is not
5 dry.

6 We all realize that the principal
7 mobilization vehicle for waste is water, and
8 some of the original thoughts about the
9 dryness of Yucca Mountain were certainly
10 determined as we got underground and we did
11 infiltration studies to not meet the
12 requirements of the solo of infiltration rate
13 that the real asset for that site would be
14 that basically there was no water.

15 Well, that turned out not to be
16 the case, so yes, it certainly seems to be
17 much easier to be thinking in terms of a
18 reducing environment, which generally means
19 the radio nuclides are less soluble, number
20 one, and number two, the corrosion rates are
21 much less, too.

22 MEMBER MESERVE: You mentioned

1 that you're doing a white paper on the DOE
2 research relating to the long-term storage of
3 spent fuel and I'm curious, first of all, when
4 is that -- that would be extraordinarily
5 valuable to us and I would be interested as to
6 when that would be available.

7 Secondly, does it encompass the
8 research that's being undertaken by EPRI and
9 others on the specific problems with
10 commercial fuel?

11 DR. GARRICK: Yes. Fortunately,
12 we have with us today the Board member that's
13 leading that effort, Andy Kadak. I think the
14 answer is that we're going to try to get the
15 paper out before the end of the year. Is that
16 right, Andy?

17 DR. KADAK: Sooner than that.

18 DR. GARRICK: Sooner than that,
19 and yes, I think that every effort was made
20 from at least a literature sort of standpoint
21 to take into account all the work that's been
22 done, including EPRI water.

1 MEMBER MESERVE: You mentioned --
2 let me just say that you mentioned a number of
3 reports that you are doing that bear directly
4 on the work of this commission --

5 DR. GARRICK: Right.

6 MEMBER MESERVE: -- and it would
7 be extraordinarily valuable that when those
8 are -- those would be very, very valuable to
9 us and we look forward to receiving them at
10 the earliest time that --

11 DR. GARRICK: Yes.

12 MEMBER MESERVE: -- you could
13 transmit them.

14 DR. GARRICK: Yes.

15 MEMBER MESERVE: Thank you.

16 DR. GARRICK: Thank you.

17 CHAIR SCOWCROFT: Phil?

18 MEMBER SHARP: Yes. First, I
19 wanted to ask a substantive question and then
20 an institutional question. On the substance,
21 one of your conclusions was that we've learned
22 that it's possible to meet the NRC licensing

1 requirement to submit an application, and I
2 wasn't sure whether that's just we've seen it
3 happen because they accepted it or whether
4 there's a more serious conclusion here and
5 that is that some of the people are disputing
6 the question about the million year and the
7 10,000 standards that we've set up.

8 Was that conclusion that it is
9 possible to meet those standards?

10 DR. GARRICK: Well, I think that I
11 have to choose my words very carefully here
12 because certainly the Nuclear Regulatory
13 Commission did not reach a finding or
14 conclusion relative to that application --

15 MEMBER SHARP: Right.

16 DR. GARRICK: -- except that it
17 had met the requirements that they had for the
18 application to be accepted. You can't just
19 take an application and dump on the doorstep
20 of the NRC and expect it to be considered.

21 It has to fulfill certain specific
22 requirements, and those are not trivial.

1 Those are pretty demanding and so the whole
2 point was that at least we've crossed that
3 milestone. We know we can develop an
4 application that meets the requirements for it
5 being accepted for review.

6 MEMBER SHARP: Let me ask the
7 institutional question and probably ought to
8 hear from your critics, and I'm not sure there
9 are any, but -- one of the major things we
10 keep learning is how poorly we've done in
11 defining the government or the institutions by
12 which we manage this issue.

13 Of course, the reason this Board
14 was established was try to answer the charges
15 that were very prevalent at the time that this
16 science was constantly being perverted by the
17 political process, and so this was to try to
18 insulate that from the process, indeed, even
19 from the appointing process is very unusual in
20 the federal government when the President
21 doesn't have total latitude as to who he
22 picks.

1 So, I'm just curious can you give
2 us any insight into how you find -- are there
3 any additional safeguards to protect the
4 scientific inquiry needed? Are there capacity
5 issues? Are there -- is there anything we
6 should learn going forward about making use of
7 this particular institution or some variation
8 on it?

9 DR. GARRICK: Well, I think one of
10 the things that you probably thought of when
11 you've participated in the creation of the
12 legislation behind the formation of the Board
13 that was extremely valuable in assisting the
14 Board in its technical evaluation was to make
15 essentially pre-decisional and event
16 information available to the Board.

17 In other words, we were -- we had
18 access to draft material, but we didn't have
19 to wait until these reports and all of the
20 material became legal, or I mean, official
21 from the standpoint of going through all the
22 review process before we could have access to

1 the data information.

2 I think in general the Board has
3 been rather pleased with the access it's had
4 to the information. We didn't always get it
5 in as timely a fashion as we would like, but
6 we were always able to eventually get what we
7 needed to do our job, which was a technical
8 evaluation.

9 MEMBER SHARP: Can I ask just one
10 further on that is my vague recollection is,
11 of course, that one of the things we wanted to
12 do also was to make impossible to be a
13 whistle-blower institution in which internally
14 within the DOE or external in Nevada or
15 anywhere else, people could bring to you
16 issues and say, "Come on, folks, look at
17 this," or something. Has that been a part of
18 this or can you give me any --

19 DR. GARRICK: Well, yes, I think
20 it was. We instituted the same thing that you
21 do here. We at all of our public meetings
22 allocated time for anybody to come forward and

1 talk to the Board and whoever was there, and
2 we also encouraged people to send in
3 information and make it a part of our
4 proceedings for that meeting if they were
5 unable to have sufficient time to make their
6 points at the meeting itself.

7 So, I think that the operational
8 aspects of the Board and its accessibility,
9 and the accessibility of information was one
10 of the things that I very much enjoyed in our
11 deliberations.

12 CHAIR SCOWCROFT: Thank you. Per?

13 MEMBER PETERSON: Dr. Garrick, I'd
14 like to start with a comment and then follow
15 with a question. The comment relates to the
16 importance of having an independent scientific
17 and technical review capability as the NWTRB -
18 -

19 DR. GARRICK: After the discussion
20 yesterday about the meaning of independence,
21 I'm not sure.

22 MEMBER PETERSON: I would just go

1 on to say that we found that in Sweden,
2 Finland, elsewhere, successful programs have
3 some sort of independent credible scientific
4 technical review group that provides an
5 independent source of information and review.

6 That's only possible because
7 people like yourself are willing to give an
8 enormous amount of time and devote enormous
9 amount of effort and also you have a, I would
10 say, a gifted and highly capable staff.

11 I'd just like to -- my comment is
12 to just recognize your service to the nation
13 and the deep appreciation I think we owe you
14 for taking so much of your time to do this
15 work because it is important to the country to
16 have your expertise and that of the other
17 members of NWTRB.

18 DR. GARRICK: Well, I very much
19 appreciate that, and I'm sure all of the
20 previous chairmen would appreciate that, as
21 well, so this has been a very satisfying
22 experience in being able to conduct the

1 reviews we've had and had the staff -- the
2 quality of staff we have. It's made the job
3 ever so much easier than it might have been
4 otherwise.

5 MEMBER SHARP: If you don't mind
6 my interrupting, I just think that's well said
7 and well deserved, and the truth is that we
8 are so poor in this town and elsewhere in this
9 country of recognizing people who give genuine
10 public service, and I think we should applaud
11 that.

12 DR. GARRICK: Thank you. Thank
13 you very much.

14 (Applause.)

15 MEMBER PETERSON: My question is
16 you have a bullet point major advances have
17 been made on quantifying the risk of geologic
18 repositories that also enhance the efficiency
19 of site characterization.

20 This is a very important point.
21 As you know, we clearly have the need to fix
22 the institutional framework which is

1 responsible for trying to carry us forward,
2 and this is something that I hope Congress
3 will take up and work on.

4 There will be controversy though
5 about the question of going back to a clean
6 slate and looking for repositories. A lot of
7 that will, I think, be centered around
8 skepticism about taking another who knows how
9 long to try to do something once again.

10 So, I think it's important for us
11 in laying out a reasonable time line for how
12 site identification, selection, and ultimately
13 licensing process might proceed to actually
14 have some idea of how much time given the
15 current state of knowledge, which is much
16 deeper than what we had 20 years ago it would
17 take to perform, say, a preliminary site
18 characterization, that is an activity that
19 local communities might sponsor to determine
20 in sufficient detail the characteristics of a
21 site that wouldn't make -- allow for an
22 informed decision about whether or not it's

1 suitable for hosting a repository, including,
2 perhaps drilling of boreholes, seismic
3 information, other things of that nature.

4 In the modern world, how long
5 might that activity take, and then
6 subsequently, how long might the detailed site
7 characterization take to provide, including,
8 I guess, underground facilities, the level of
9 information needed to license a facility.

10 I don't ask you to do this off the
11 top of your head because it's important, but
12 if you could maybe speak to that briefly, and
13 then I think this is a question that we could
14 benefit from NWTRB's assistance on to
15 understand what are these time frames
16 necessary for preliminary site
17 characterization activities, again, sufficient
18 in form a decision on moving forward for
19 detailed characterization, licensing, and
20 construction, and then that detailed
21 characterization.

22 DR. GARRICK: Right. Well, first

1 let me say I'm very pleased that you recognize
2 that as an important experience finding
3 because I was -- I think it's one of the most
4 important, and it sort of reminds me of the
5 old carpenter rule -- you measure twice and
6 cut once.

7 The analog here is
8 characterization is the measure, and I think
9 that one of the things that we found out in
10 the Yucca Mountain project was that the
11 analysis is much, much, much more than a water
12 flow model.

13 This came about particularly with
14 respect to the thermal issues that were
15 developed and the coupled processes associated
16 with trying to model things where there was
17 interactions between thermal effects, chemical
18 effects, mechanical effects, and so, I don't
19 know that I can answer your question, but I do
20 know that the characterization program that
21 was invoked for Yucca Mountain was without the
22 benefit of really the kind of hindsight we now

1 have as to how we would go about doing it.

2 I think that whatever time we
3 spent on it, though we probably should double
4 it, in order to specialize the information to
5 what we're trying to measure at the site with
6 respect to risk and performance.

7 That's what I'm really talking
8 about, the best way to find out what we need
9 to do with respect to characterization and
10 with respect to making measurements is to try
11 to calculate it.

12 Your old professor, Tom Pickford,
13 used to say many times that the best way to
14 learn about something is to try to calculate
15 it, and we weren't there to try to calculate
16 infiltration rates alone. We weren't there to
17 try to calculate just radiation dose.

18 We were trying to figure out how
19 all of these phenomena interacted with each
20 other with respect to the figures of merit
21 that would eventually establish whether or not
22 this was an acceptable site.

1 So, I think if there's an
2 opportunity to really streamline them the next
3 time around, it would be to pay a lot more
4 attention to site characterization than we
5 did.

6 The reason this came about was
7 that whenever we were reviewing the technical
8 aspects of the total system performance
9 assessment, one of the areas that we struggled
10 with was trying to relay it back to the
11 supporting evidence that was developed during
12 the site characterization.

13 In many cases, we couldn't do
14 that, and I think that's where some of the
15 greatest benefits can accrue with respect to
16 eventually having the construction process and
17 the engineering process sufficient.

18 MEMBER PETERSON: Hopefully, life
19 might be a little easier with the saturated
20 site.

21 DR. GARRICK: Well, it might be.

22 MEMBER PETERSON: I guess the key

1 thing -- it would be very valuable to us, I
2 think, for potentially even broken down by
3 different geologic media and repository design
4 options to have some idea as to what the time
5 frames might be to perform appropriate site
6 characterization.

7 DR. GARRICK: Well, I think you
8 need to perform a performance analysis in
9 advance. This is one thing we learned in the
10 reactor business that was extremely valuable.

11 When we started doing phased risk
12 assessments, it turned out to be enormously
13 beneficial in terms of returns on operations
14 and maintenance as well as design and
15 construction.

16 So, I think that these are just
17 some backup slides that we -- so, I agree with
18 you, and I think that that's where a lot of
19 very careful planning needs to be done -- is
20 on the front end.

21 One thing I don't want to leave
22 the impression because my geochemist friends

1 on the committee maybe would not like that,
2 we're not suggesting here that you can't build
3 a repository in an oxidizing environment.

4 There are ways of doing it, and I
5 think that the issue here is more how you keep
6 the water away from mobilizing the waste and
7 also waste farms do become important under
8 those conditions.

9 CHAIR SCOWCROFT: Did you have a
10 question, Susan?

11 MEMBER EISENHOWER: I don't know
12 whether I have a question or not. This issue
13 of water is extremely interesting. It keeps
14 coming up. It came up this morning before the
15 coffee break and you mention it in your
16 comments about Yucca Mountain.

17 A number of us here on this
18 Commission just got back from Sweden and it's
19 pretty stunning to note the water that's
20 cascading down the sides of the tunnel there
21 underneath the Baltic Sea.

22 I was wondering if you could help

1 us, for those of us who are not scientists on
2 this Commission, to clarify this water issue
3 a bit and whether it relates to permanent
4 disposal. Is that the issue or was it --
5 would the water be less of an issue?

6 I mean, it seems to me it probably
7 would be less of an issue if you had -- if it
8 were an interim storage. Let me just say one
9 other thing in terms of the time frame that
10 Commissioner Peterson mentioned.

11 The thing that is stunning about
12 the way the Swedes have themselves organized
13 is that they have everything phased. They
14 have an interim retrievable storage facility,
15 and they have a special storage for low and
16 medium level waste and they're licensing a
17 repository at the same time, but everything
18 seems to have a process and they do not keep
19 used fuel at reactor sites.

20 They begin to move it through a
21 process right away, so I was just wondering if
22 you could comment on any of those issues I

1 just noted.

2 DR. GARRICK: Well, I think that
3 the one thing that is absolutely clear to us
4 and that we struggled with in developing the
5 corrosion and understanding the corrosion
6 potential is that you have to understand the
7 chemical environment and the compatibility of
8 that chemical environment with the waste farm
9 that you're dealing with.

10 That's why -- that's one of the
11 reasons why it may be more of a challenge than
12 we need to be thinking in terms of one
13 environment handling all waste farms. There
14 may be some merit in thinking about multiple
15 geologic disposals, but we're not sure about
16 that.

17 It'd be much easier, of course, if
18 you had one that could fit -- that could
19 handle anything, but it may turn out to be far
20 more efficient to be -- pay much more
21 attention to the compatibility between the
22 waste farm and the chemical, mechanical, and

1 thermal environment that it's going to be in.

2 CHAIR SCOWCROFT: Dr. Garrick, we
3 thank you very much for your presentation and
4 especially for your dedication to this very
5 difficult issue. Thank you very much.

6 DR. GARRICK: Thank you very much.
7 Pleased to be here.

8 CHAIR SCOWCROFT: That concludes
9 our hearing. We now have a few minutes for
10 subcommittee status reports and discussion
11 within the Commission. Jonathan, I think you
12 have a presentation to make.

13 MEMBER LASH: Thank you,
14 Mr. Chairman. As I understand, you would like
15 to hear a little more about the trip that
16 Commissioner Eisenhower mentioned.

17 Five of us, Commissioner
18 Eisenhower, Commissioner Peterson,
19 Commissioner MacFarlane, Commissioner Bailey,
20 and myself, went with several members of the
21 staff on a trip to Finland and Sweden over the
22 course of eight days.

1 In each case, we were visiting a
2 country which is entering the licensing
3 process for a deep geologic repository. The
4 license application is being submitted by a
5 private corporation formed by the utilities
6 and has complete responsibility for the
7 management and disposal of high-level
8 radioactive waste.

9 In each case, the license
10 application will be for a facility to be
11 constructed in a not only willing, but eager,
12 host community, that consent being expressed
13 through local government officials.

14 In each case, the process seems to
15 enjoy national support, as well. There's a
16 national consensus that there's an obligation
17 to dispose of waste because each country
18 relies significantly on nuclear power for its
19 electrical energy supply.

20 We met with representatives of
21 national government, local governments, the
22 corporate officials responsible for managing

1 the process and environmental and local
2 citizen representatives, both in Helsinki and
3 in Stockholm and also in the communities that
4 were being considered for waste disposal.

5 I won't go into detail. Of
6 course, both Finland and Sweden are much
7 smaller, more homogeneous societies than the
8 United States. They don't have defense waste
9 to dispose of. They have stronger traditions
10 of trust in national institutions, so there
11 are significant differences, but there are
12 also very significant lessons as both Susan
13 and Per have mentioned earlier.

14 They've gotten a lot of things
15 technically and politically right. In each
16 case, they have a very open process. They
17 have made it clear from the beginning that the
18 siting process would be based on full consent
19 of the communities involved.

20 They have provided significant
21 financial support for participation both by
22 community officials, citizens groups,

1 environmental groups. The corporations with
2 responsibility for the waste have recognized
3 that they can only move forward with community
4 support, so they've gone to extraordinary
5 lengths, particularly in Sweden, to listen to
6 and respond to the concerns of the community.

7 In Sweden, they ended up with a
8 competition among two communities whose
9 officials agreed at the end that the losing
10 community, the one that did not get the
11 facility, would get more significant
12 compensation for the decision than the winning
13 community.

14 I have to say one other
15 observation. We found the local officials
16 incredibly sophisticated about the process and
17 about the importance of encouraging opponents
18 as well as supporters, about giving space for
19 opponents to express their views so that they
20 were not silenced by what seemed like very
21 significant public support.

22 There had been polling that

1 showed, I think, almost 80 percent support in
2 the communities, but even so, they were
3 offering compensation to their critics to come
4 participate in the process. I think that's
5 part of what has created this sense of trust.
6 So, I think we all found it an extraordinarily
7 useful set of visits.

8 CHAIR SCOWCROFT: Was there any
9 sort of a referendum? You said -- you
10 mentioned polling. How did you get -- how did
11 they get the sense of the community?

12 MEMBER LASH: The consent was
13 expressed through local government, through
14 the local council. I don't think in either
15 case there was any kind of a referendum, but
16 they had done polling to confirm what they
17 thought was broad support.

18 In each case, there will be some
19 kind of national government approval. There
20 was a vote of Parliament in Finland and the
21 Cabinet has to approve the license application
22 after the nuclear authority has recommended it

1 in Sweden.

2 CHAIR SCOWCROFT: Other comments,
3 questions, observations? Per.

4 MEMBER PETERSON: I'd just like to
5 note that the trip to Sweden and Finland for
6 me also was very helpful, and the information
7 we gathered was very useful. The
8 opportunities to meet with especially local
9 elected officials, NGOs, as well as senior
10 people in the government, particularly in
11 regulation, allowed us to learn a lot about
12 some of the detailed things that had been done
13 in Sweden and Finland that have made their
14 programs successful.

15 So, the lessons from this trip I
16 think will be very helpful to the Commission
17 in our effort to generate a set of findings
18 and recommendations.

19 MEMBER LASH: I believe, John or
20 Mary, I think the records of all of our
21 meetings are public and posted on the website?

22 MR. KOTEK: They're not there yet,

1 but they will be.

2 MEMBER LASH: They will be because
3 these were official subcommittee meetings and
4 we tried to adhere to our principles of
5 openness as much as possible although live
6 broadcast proved to be difficult.

7 CHAIR SCOWCROFT:

8 MEMBER EISENHOWER: I just wanted
9 to add, too, sort of strong impressions for
10 me. First of all, it's absolutely right about
11 the way they handled the opposition. It was
12 stunning to be there at the waste management
13 company's facility and to have them pay for
14 opponents to the project to come in and call
15 them all sorts of names.

16 I mean, it was really quite
17 impressive, and I think therefore even in the
18 contention at times, there seemed to be a kind
19 of a community around that. I would say it
20 was a very positive thing to watch and it was
21 impressive and we have a lot to learn from
22 that.

1 The second thing I wanted to note
2 for Americans who haven't been there, do look
3 this site up, the one in Sweden, on the
4 internet. It's extraordinary that this
5 repository for low-level and medium-level
6 waste is built under the Baltic Sea.

7 It's quite extraordinary to go
8 down into this tunnel and the thing that's
9 stunning about it is when you come back up to
10 the surface, people are sailing sailboats over
11 this repository, and we were told there are
12 5,000 country houses in the area.

13 So, it's rather interesting in
14 America we have the attitude that there's no
15 isolation or no distance too far for putting
16 facilities of this kind whereas through a
17 rigorous public education process and the rest
18 of it that this repository lives rather
19 compatibly below the surface of the Baltic Sea
20 where all kinds of recreational activity
21 occurs on its surface. Just rather
22 impressive, I'd say, and when I mean

1 impressive, I'm not saying that we could
2 replicate these conditions here necessarily,
3 but it certainly made an impression, didn't
4 it?

5 MEMBER HAGEL: Mr. Chairman, may I
6 ask Commissioner Eisenhower a question? In
7 reference to paying, where did the money come
8 from? Is that taxpayers' money? Is that fees
9 from plants? Where does the money come from?

10 MEMBER EISENHOWER: If you're
11 talking about the money for the repositories,
12 and I'm sure that my other commissioners could
13 comment on this, as well, they have a waste
14 management fund.

15 What was rather striking about
16 this is it is absolutely a lockbox, and when
17 they described how this money goes in there
18 and doesn't come out and isn't used for any
19 other purpose except the purpose for which it
20 was intended, there was a slight intake of
21 breath in Americans who were listening to this
22 presentation, but Jonathan, I'm sure, could

1 elaborate on this.

2 MEMBER LASH: I think that the
3 company pays for participation, but there's
4 also a government program to which groups can
5 apply for participation funds. Is that
6 correct? Yes.

7 MEMBER HAGEL: No, I'm asking
8 about what you referenced, Susan, and the
9 opponents came and had less than complimentary
10 things to say about some, as you have
11 described it.

12 But then you said it was stunning,
13 I think, in your words, that they were
14 actually paid for that. So, my question is,
15 well, who pays for that? Where does that
16 money come from?

17 MEMBER EISENHOWER: Actually, I
18 think it's done in a more elegant way than
19 that. It's just regarded as support for a
20 public dialogue and they receive an annual
21 amount. As a matter of fact, I gather from
22 these funds that a non-governmental

1 organization receives an annual stipend to
2 continue to monitor the activities of the
3 waste management company and their activities.

4 It's through that annual
5 contribution to the NGO that this opposition
6 group participates. Now, I think there is a
7 generalized --

8 MEMBER HAGEL: Are those public
9 funds?

10 MEMBER EISENHOWER: They're public
11 funds. I believe.

12 MEMBER PETERSON: I should maybe
13 just jump in and note that all of the costs
14 associated with the management of nuclear
15 waste are paid by fees charged on electricity
16 generation, including the cost for the
17 regulatory agencies within the government are
18 reimbursed from these fees.

19 So -- and the cost for public
20 participation, all of it ends up in the price
21 of electricity. If we could do that with
22 fossil fuel waste, that would be fantastic,

1 but in this case in Sweden, it's all covered
2 through the cost of electricity.

3 MEMBER HAGEL: So, there's no --
4 not taxpayer money or so-called as we would
5 see it or --

6 MEMBER PETERSON: No. No.

7 MEMBER HAGEL: -- public money if
8 it's as you say. Thank you.

9 MEMBER SHARP: Mr. Chairman, on
10 that point, I go right to something I
11 suggested yesterday is that we compile how we
12 do this in the United States because I think
13 there will be examples you will find where out
14 of the waste fund we pay for participation of
15 certain people in Nevada.

16 I don't know how these all
17 develop; sometimes out of court fights,
18 sometimes out of negotiations between states,
19 but there are different techniques we've been
20 using for multiple years and we ought to just
21 get that record clear. Some of it's good,
22 some of it may not work very well.

1 CHAIR SCOWCROFT: Other comments?

2 If not, we will now turn to our public oral
3 comments. We have 11 people asking to speak
4 to us. We will allow four minutes for each
5 presentation.

6 We have a system of lights here, a
7 green, amber, and red light, and we ask you
8 all to keep your presentations within the four
9 minutes. First presenter is Dr. Alex Pavlak
10 from Thales Research, if you would come to the
11 podium, please. Thank you, Dr. Pavlak, you
12 may proceed.

13 DR. PAVLAK: Good morning. My
14 name is Alex Pavlak. I am a Ph.D.
15 professional engineer. My expertise is
16 systems architecture. I've had the
17 opportunity to create the structure of
18 unprecedented systems.

19 From this perspective, I wanted to
20 offer a suggestion to the BRC. You already
21 have a strategic goal. You're looking at
22 nuclear power. The next step is the strategic

1 vision. At some point in the future, if and
2 when nuclear power generates, say, 80 percent
3 of our electric power, what's the concept?
4 What's this look like?

5 You arrive at the strategic vision
6 by creating scenario analysis, by thinking
7 through the numbers associated with a single-
8 pass Light Water Reactor with thinking through
9 the whole system associated with a breeder
10 reactor.

11 Typically, if you do a rigorous
12 scenario development, typically one scenario
13 tends to stand out as superior to the other
14 options. Now, there are several reasons why
15 the BRC should be interested in developing
16 this strategic vision, this picture of the
17 future.

18 One reason is that it is of
19 enormous help to plenty. You don't do things
20 that are in conflict with the vision. It
21 allows you to set priorities and provide the
22 efficient use of resources.

1 The second reason is that it
2 avoids serious mistakes. You don't wander
3 down avenues that turn out to be dead-end
4 streets. You've thought through this stuff
5 ahead of time before you do your scenario
6 development.

7 The third reason is that it
8 provides a standard for comparing alternative
9 energy options. At some point, I think the
10 U.S. needs to think through in some rigorous
11 technical depth the various opportunities it
12 has, and the BRC has an opportunity to set the
13 standard for doing this.

14 My final comment is that America's
15 nuclear future is broader than the back-end of
16 the fuel cycle, and at some point, the
17 scenario development ought to include the
18 reactor so that you can come up with an
19 estimate on cost that would allow the
20 comparison with other energy options.

21 I thank you for the opportunity to
22 comment. Any questions?

1 CHAIR SCOWCROFT: Thank you very
2 much, Dr. Pavlak. Our next presenter is
3 Brennain Lloyd of NorthWatch, and he will be
4 followed by Linda Lewison. Mr. Lloyd? Oh,
5 excuse me. Excuse me, Mrs. Lloyd. You may
6 proceed.

7 MS. LLOYD: Thank you. My name is
8 Brennain Lloyd, and I am here on behalf of
9 NorthWatch where I coalition of environment
10 and social justice organizations, our public
11 interest organization in Northern Ontario, in
12 Canada.

13 We've been very involved in the
14 discussion of nuclear waste management in
15 Canada since our founding in 1998, and I want
16 to thank you for the opportunity to make some
17 comments today as part of your proceedings.

18 Time is brief, so I really want to
19 emphasize three key points. First point is
20 that nuclear waste management is not the good-
21 news story in Canada that I think you may have
22 been given the impression it is through

1 presentations at your July disposal committee,
2 your September full commission hearing, and
3 yesterday by Mr. Nash.

4 Several problems. Key problem is
5 the nuclear waste management organization is
6 an industry-only organization, very different
7 than the arms-length independent agency that
8 was recommended at the end of a 10-year review
9 of Atomic Energy of Canada Limited's
10 geological disposal concept. This is a
11 significant feeling.

12 The Nuclear Waste Management
13 Organization consultation process, which
14 you've heard described, to date, it can be
15 characterized I think quite fairly as one of
16 manufacturing its own consent, carefully
17 crafting engagement activities with selected
18 publics to arrive at a pre-determined -- what
19 we can only surmise is a pre-determined
20 outcome, and it's an outcome that coincides
21 with the industry's long-standing preference,
22 i.e., geological disposal.

1 It's dressed a little different.

2 It's called a little different. It's
3 geological disposal. It is, in essence, the
4 same concept as failed the environmental
5 assessment hearing which concluded in 1988.

6 First Nations, what you, I think,
7 would call tribes in the United States, First
8 Nations in Canada have not been engaged in a
9 manner which they recognize as being either
10 adequate or appropriate.

11 The technical work done by the
12 AECL, particularly in their 2002 to 2005 study
13 period, was very thin -- the siting process,
14 which results as a seriously flawed process in
15 its scope, in its sequencing, and in the
16 substance.

17 The Nuclear Waste Management
18 Organization plan, which they have titled
19 Adopt a Faith Management, incorporates and
20 builds upon the failures of the previous
21 proposal, i.e., Atomic Energy of Canada
22 Limited's geological disposal concept.

1 Brings us to point number two,
2 which is with respect to geological disposal
3 as a concept. Geological disposal has not
4 been demonstrated to be safe or acceptable.
5 That was the outcome of our ten-year hearing.

6 Atomic Energy of Canada Limited's
7 geological disposal was, as I said, subject to
8 the ten-year hearing -- ten-year review, 13-
9 month hearing, and the panel conclusion
10 referred to as the Seaborn Report found that
11 it had not met the test set to it, i.e., was
12 the concept demonstrated to be safe and
13 acceptable.

14 It said some words around on
15 balance, at the conceptual stage in
16 development, but it had not been demonstrated
17 to be safe and acceptable.

18 More recently, independent reviews
19 internationally have concluded more generally
20 that the technical case for geological
21 disposal has not been made and there are
22 several serious challenges which as long as

1 they remain unresolved mean that the safety
2 case cannot be made.

3 These include things -- issues
4 around container corrosion, potential for
5 failed barriers, questionable modeling
6 assumptions, as well as a lack of sufficient
7 peer review and independent analysis. What's
8 required is isolation, isolation of these
9 wastes into perpetuity.

10 What is known now is that
11 geological disposal as currently proposed will
12 not achieve that isolation over the time
13 frames required or at least at best has not
14 been demonstrated to do to date.

15 Third point is the attempted
16 decoupling of the problem of waste management,
17 management of the current waste volumes, and
18 the continued production of waste is
19 illegitimate.

20 As long as the reactors continue
21 to operate, the greatest radiological burden
22 will continue to be at the reactor site

1 regardless of any transfer offsite of some of
2 the older waste.

3 The first principle of waste
4 management for all other waste streams should
5 apply here, and that is reduction at source.
6 Simply translated, that means stop making it.

7 Thank you, and I would welcome any
8 questions, comments, and I have brought from
9 written materials. I'll provide Mr. Frazier,
10 and we'll follow with a written submission in
11 follow-up to some of the very interesting
12 discussions of yesterday and today. Thank
13 you.

14 CHAIR SCOWCROFT: Thank you, that
15 would be very helpful. Thank you, Ms. Lloyd.
16 Next, Linda Lewison of NEIS Nuclear to be
17 followed by Ellen Thomas. Ms. Lewison?
18 Welcome.

19 MS. LEWISON: Hello. Thank you.
20 My name is Linda Lewison, and I'm from
21 Illinois, which has, as you know, more
22 reactors and therefore more waste from

1 reactors than any other state.

2 My background is in business.

3 I've been with national security issues for
4 over two decades and had the pleasure of first
5 meeting Susan Eisenhower when I served as
6 Midwest Director of Business Executives for
7 National Security and Susan was at the head of
8 a national program that we both worked on.

9 The point has been made just now
10 by the person who spoke before me and by other
11 people here of the direct connection between
12 radioactive waste and the making of it, of
13 closing the reactors, and so if I could just
14 put it -- the quote from the gentleman who
15 spoke last that the best way to learn about
16 something is to calculate it, is to just make
17 this first of two points about solving for X.

18 In order to solve for X if X is
19 the amount of radioactive waste that we are
20 dealing with, we must put a number on it. We
21 must calculate it, and that means it has to be
22 a finite number and the making of it has to

1 stop.

2 The second point I want to make
3 about -- is to suggest a new definition of
4 what is meant by interim. We've spent a lot
5 of time and you've spent a great deal more
6 time thinking about what to do in the interim,
7 and while we have agreement that we have some
8 sort of consensus on that there will be
9 eventually a geological repository, what we do
10 in the interim is a major part of the
11 discussions.

12 I want to suggest that the interim
13 starts with when we put the fuel rods into the
14 spent fuel ponds and we don't have an end to
15 it yet, so we are living in the interim and
16 our concern is what we do on Monday, what we
17 do right now onsite, no matter what else may
18 happen because that onsite piece is going to
19 go on for at least a few years, if not a few
20 decades until we come to some agreement about
21 what to do next.

22 I want to suggest that that onsite

1 piece be governed by three simple guidelines.

2 One, move the material in the safest way

3 possible understanding that it's safer --

4 we're not going to ever get to safest -- that

5 is in some kind of hardened onsite storage

6 containers.

7 Number two, move it the least

8 frequently. That is, touch it the least, move

9 it the least amount, and number three, move it

10 the least distance. That is, move it

11 somewhere onsite or close to onsite, again,

12 because of the obvious risks that have been

13 discussed here already.

14 I think if we're guided by those

15 three principles as we move it right now on

16 Monday with the what do we do on Monday part

17 of your planning that we will do a great deal

18 to safeguard the public in ways that I haven't

19 heard discussed too much yet here.

20 The last thing I want to say is I

21 want to tell you a quick story about my son.

22 My son, Age 25, who didn't vote in the last

1 election, asked this question. He was at a
2 meeting in Chicago about what to do with
3 radioactive waste.

4 He said, "You know, in a perfect
5 world, why can't we just send it up to space,
6 right? Not in my backyard. What can we do
7 here to -- how can we get to that? Just get
8 it out of here."

9 The answer was, "I can answer that
10 question in two words. Challenger and
11 Columbia." That is, that we are flawed human
12 beings that we try our best and we strive so
13 much in these meetings to do the right thing,
14 but that we need to take into account that we
15 are not perfect and understand our own human
16 frailty and try and think about the risks that
17 we take every time we deal with this material
18 in whatever plans we make for the future.

19 Thank you.

20 CHAIR SCOWCROFT: Thank you very
21 much, Ms. Lewison. We appreciate your
22 comments. Our next presenter is Ellen Thomas

1 with WILPF to be followed by Alfred Meyer.

2 Welcome, Ms. Thomas.

3 MS. THOMAS: Thank you. Good
4 morning. It's a pleasure to see all these
5 very important, intelligent people considering
6 such an important issue.

7 I'm Ellen Thomas, and I'm here
8 representing Proposition One campaign to
9 abolish nuclear weapons and also Women's
10 International League for Peace and Freedom.

11 I just want to speak as a
12 grandmother. There's a lot of people who can
13 talk about technicalities, but I have to speak
14 from my heart. I think that we are at a
15 pivotal point in history when we can continue
16 to invest in radioactive waste and weapons and
17 the byproducts and end-products of the chain
18 of nuclear industries from uranium mining to
19 plutonium, or we can decide to shift our
20 infrastructure and economy toward a
21 sustainable future, retool our arms industries
22 to mass produce solar, wind, tidal, and other

1 energy systems, which will free us of both
2 fossil fuels and the dangers of nuclear power.

3 If we choose the nuclear chain, we
4 will have more and more leakages, transport
5 accidents, and new contaminations of our
6 precious water and air.

7 I live in the beautiful mountains
8 of North Carolina between Oak Ridge,
9 Tennessee, and Savannah River. Nuclear waste
10 trucks drive up and down I-26 four miles from
11 my house. This concerns me.

12 A new nuclear power plant is
13 proposed 40 miles away in Gaffney, South
14 Carolina, on the very un-broad Broad River,
15 which suffers from droughts and is used by the
16 communities down the river for fishing and
17 swimming and recreational use, and this
18 concerns me.

19 I hear rumors which suggest that
20 the nation's high-level nuclear waste facility
21 could be put in the granite hills of Sandy
22 Mush, North Carolina, a gorgeous little valley

1 with 100 springs per square mile rich with
2 family farms. I posted to the BRC website a
3 video of this place when I appealed to you.

4 I urge the Blue Ribbon Commission
5 to reject Sandy Mush as the nation's high-
6 level waste dump. I urge you to turn away
7 from new nuclear power plants, phase out the
8 existing plants, and store the existing waste
9 in hardened onsite facilities until we figure
10 out how to neutralize it so transport
11 accidents don't spread the contamination,
12 which is already so much worse than we
13 should've allowed it to become.

14 I urge you to break the nuclear
15 chain and forge instead a sustainable future
16 for our grandchildren carbon-free and nuclear-
17 free. Thank you.

18 CHAIR SCOWCROFT: Thank you very
19 much, Ms. Thomas. Our next presenter is
20 Alfred Meyer, a private citizen, to be
21 followed by Dave Kraft. Welcome, Mr. Meyer.

22 MR. MEYER: Thank you very much

1 for this opportunity to speak to you. My name
2 is Alfred Meyer, and I speak to you today as
3 a private citizen. The Blue Ribbon Commission
4 on America's nuclear future -- in considering
5 what our nuclear future will be, I think that
6 we can agree that there is much that is
7 unknown.

8 We don't know exactly what the
9 electricity demand will be, what technical
10 advances or problems we may find in nuclear
11 technology. The economics of new power plants
12 and also maintaining the operational safety
13 and longevity of old plants, all these things
14 are unknown.

15 But there is much that is known.
16 We do know that we have the military and
17 industrial waste that exists presently and it
18 has no path for disposition. We also know
19 that major river systems and aquifers are in
20 real and present danger; the Columbia River
21 endangered by Hanford, the Snake River from
22 the Idaho National Laboratory, the Savannah

1 River at the Savannah River site as three
2 prime examples.

3 Waste is buried in leaking tanks,
4 and it's moving towards these important water
5 resources, nuclear waste of all levels and
6 classes, solids, liquids, and gasses that
7 today have no pathway for disposition. These
8 are known.

9 I would contend that nuclear power
10 is absolutely the most expensive, dangerous,
11 and arrogant way to boil water. For the
12 privilege of boiling water for 40 or 60 years,
13 we leave behind the most dangerous elements
14 known to man.

15 These elements endanger the human
16 genome, the genetic material that makes us us,
17 for millions of years to come. So, I would
18 ask that in your report to please be sure to
19 include two key elements. One is give us a
20 clear plan for dealing with the waste that
21 already exists, high-level and so-called high
22 level waste.

1 Number two, I really hope that
2 your report will include a thorough
3 examination of the option of stopping making
4 nuclear waste, phasing out nuclear power soon.

5 What are the economic, public
6 safety, and security benefits of shutting down
7 nuclear power plants? Compare this analysis
8 with any plan which would continue and/or
9 expand nuclear power. Thank you very much.

10 CHAIR SCOWCROFT: Thank you,
11 Mr. Meyer. We will next hear from Dave Kraft
12 of NEIS to be followed by Chas Jaszczak.
13 Mr. Kraft? Welcome. The floor is yours.

14 MR. KRAFT: Thank you very much.
15 I appreciate the opportunity to address you
16 hear, and I also want to thank Commissioners
17 Sharp and Meserve for the consideration given
18 in Illinois when I presented as part of a
19 panel for the subcommittee in Chicago.

20 I'm going to start out with a
21 piece of information I want to share with you
22 and then four questions that I want put your

1 way as you continue your deliberations.

2 I'm glad you brought up the report
3 on the Sweden visit because there were some
4 really interesting and intriguing concepts
5 that you brought back, but as Commissioner
6 Sharp mentioned, there are probably, and I
7 know for a fact, U.S. examples that you can
8 turn to for more information, and I actually
9 cited one of those in my testimony in Chicago.

10 I was a member of the Illinois
11 Citizens Advisory Group on low-level
12 radioactive waste from 1986 to 1990, and we
13 went through pretty much the same kind of
14 agonizing process that you all are squirming
15 about right now and will continue to do so.

16 I would urge you to go back to
17 IDNS and gather some information and some of
18 the records from that. It was not an easy
19 process. It didn't come up with a facility,
20 but we learned a lot of lessons that I think
21 would be of value to this Commission, so I
22 want to leave that as a resource.

1 Now my questions. You gave my
2 colleagues and 30 other organizations and
3 167 co-signing organizations a challenge to
4 answer questions, so I thought turnabout would
5 be fair play, and I want to leave you with
6 four questions that you might consider as you
7 deliberate.

8 The first is your resumes don't do
9 justice on the BRC website. The tremendous
10 amount of knowledge and background here is
11 phenomenal but, quite honestly, I don't really
12 know it in-depth for all of you yet I get the
13 impression from the website this is a highly
14 technically oriented commission.

15 In fact, even the mandate is
16 charged to look at more technical issues and
17 on the back-end of the cycle, so it's either
18 hard sciences or public policy is the general
19 gist I get.

20 In your wisdom, you have sought
21 the consultation of the social sciences, and
22 I've seen that in some of the people you've

1 invited to present to you. One of the things
2 I would urge you and recommend that you do is
3 go back to the Department of Energy and
4 perhaps the President and say perhaps we need
5 a new tail and a new dog the next go-round.

6 Maybe this issue should be begun
7 from the standpoint of the institutional
8 problems and the social sciences and work your
9 way in the other direction. I bring that up
10 because if you don't do that you are right now
11 on the precipice of falling one way or another
12 to using the technology driver to then go and
13 pursue the social sciences as a justifier.

14 That's not what you want going
15 forward in the process. You don't want kind
16 of a rigged game where the technology drives
17 it and then you tweak the social science later
18 and try and solve those problems.

19 So, until these are more co-
20 equally dealt with, I think you're going to
21 have some difficulties.

22 My second observation and question

1 gets down to the HOSS issue and what should be
2 done on radioactive waste issues. I believe
3 Secretary Chu gave you pretty much latitude in
4 his opening remarks that you do have
5 permission to look at front-end options as
6 they modify back-end outputs.

7 As such, that's why we figured
8 coming to you and saying you do have to
9 consider non-nuclear options as well as
10 nuclear options in the future of America's
11 energy policy.

12 So, the question would be what
13 non-nuclear technologies are you thoroughly
14 investigating and will work on that will also
15 minimize radioactive waste production and the
16 problems of final solution?

17 The next question I would ask is
18 will the BRC conduct a cradle-to-grave
19 cost/benefit analysis comparing the hardened
20 onsite storage to other back-end options such
21 as reprocessing because unless you engage in
22 that, you sort of rigged the game once again

1 and you've prejudged the issue without looking
2 at it fully?

3 My final point is just a short
4 one. In the last few days, the trade journals
5 have revealed that in the case of a severe
6 reactor accident, there seems to be a
7 breakdown in agreement amongst NRC, EPA, and
8 FEMA as to who would be responsible for
9 mitigating the long-term consequences of that
10 accident.

11 That really begs the question of
12 is the same scenario going to unfold in the
13 case of a radioactive waste transport accident
14 and in the case of the long-term storage and
15 perhaps permanent isolation of the waste.

16 I think that's a very serious
17 institutional consideration that this
18 Commission needs to consider. If the three
19 prominent agencies dealing with reactors can't
20 agree now, how can you possibly make
21 meaningful recommendations to the Department
22 of Energy unless they're in agreement?

1 So, I will leave it at that. If
2 there are any questions, I would be willing to
3 answer them, and I'll mention that I'll be
4 posting my Chicago remarks electronically,
5 which I've modified. Thank you very much.

6 CHAIR SCOWCROFT: Thank you,
7 Mr. Kraft. We will look at your questions.
8 Next presenter is Cash Jaszczak from Nye
9 County, Nevada, to be followed by Keith
10 Larson.

11 MR. JASZCZAK: Thank you for the
12 opportunity to make a brief remark. You've
13 seen us here before. You know who we are.
14 We're the home of Yucca Mountain. That hasn't
15 changed.

16 Listening for the last two -- day
17 and a half, the Canadian presentation was
18 especially interesting. It basically talked
19 about a good deal of the things that are
20 already in the framework of the Nuclear Waste
21 Policy Act.

22 They're there. They're in place,

1 and the Nuclear Waste Policy Act is -- it has
2 been followed up to this point, at least at
3 some level. The safety case has been prepared
4 in the sense of the license application.

5 The specific recommendation to you
6 is would you consider allowing the NRC to
7 complete its review of the license application
8 then put that \$500 million that they've had to
9 do that work to good use.

10 This contributes to the issue of
11 trust in the government institutions that have
12 been part of this process. Let's not abandon
13 those at this point, and they may be useful to
14 you on whatever occurs and however we end up
15 in this process. The point being is don't
16 throw the baby out with the bath water. It's
17 not time for that just yet.

18 Also in the Canadian presentation,
19 it talked about benefits. We as Nevadans
20 chose not to negotiate for benefits. The
21 opportunity was there. You need to know that.
22 Those provisions were also part of that.

1 Last but not least, seven of the
2 ten Nevada counties which are affected units
3 of local government either accept or take no
4 exception to the reality of Yucca Mountain.

5 Not all Nevadans are against Yucca
6 Mountain, and I'd offer to you that that
7 process needs to play out and we'll live with
8 whatever choices you or this administration or
9 any other administration make, but we are
10 informed the Nuclear Waste Policy Act did
11 provide funds to allow us to have subject
12 matter experts to be able to have an informed
13 citizenry.

14 It's not unanimous by any stretch
15 of the imagination, but it goes to all those
16 things that Mr. Jenkins-Smith made and let the
17 process play. Thank you very much.

18 CHAIR SCOWCROFT: Thank you very
19 much, Mr. Jaszczak. We appreciate your being
20 with us again. The next presenter is Keith
21 Larson from the City of Caliente. He'll be
22 followed by Dan Brown.

1 MR. LARSON: I want to thank you
2 for this opportunity. I was mayor of Caliente
3 in 1985 when Yucca Mountain was proposed and
4 we formed a JCCIAC in our county, Joint City
5 County Impact Alleviation Committee, and we
6 loved acronyms.

7 So, anyway, what I wanted to say
8 is that we've been engaged since 1985, and
9 we've continued to be engaged until 2010. I
10 thought this whole matter was going to be over
11 in 1997, but what is it that we want out of
12 this deal?

13 All we wanted was a place at the
14 table. It's important to us. We've been
15 living with it for over 30 years. I've raised
16 all my children. I've got grandkids that are
17 now in their 20s, and it's been a long time.

18 Whether we were for Yucca Mountain
19 or against it, that wasn't the issue. The
20 issue is we need to be at the table when those
21 decisions are being made that affect our
22 communities and our county. Thank you very

1 much.

2 CHAIR SCOWCROFT: Thank you,
3 Mr. Larson. We appreciate your comments.
4 Next presenter is Dan Brown from Securad --

5 MR. BROWN. Good morning, ladies
6 and gentlemen --

7 CHAIR SCOWCROFT: -- followed by
8 Diane D'Arrigo.

9 MR. BROWN: Thank you for this
10 opportunity to make a presentation. My name
11 is Danny Brown. I'm with Securad,
12 Incorporated, which is a Canadian company
13 where we're looking at building a deep
14 geological repository in Northeastern Canada.

15 I'd like to make a few comments
16 about what I've been hearing at all of these
17 hearings. In a perfect world, we'd be able to
18 generate energy without having a downside cost
19 to it. Unfortunately, we're not in a perfect
20 world.

21 No matter what we do, there's
22 going to be some consequences of generating

1 energy, and energy's at the core of every
2 society. Now, the world is moving forward.
3 We've got -- Abu Dhabi is buying reactors from
4 South Korea.

5 Vietnam has just announced they're
6 going to build or have a reactor built by
7 Hitachi of Japan. China has stated recently
8 that they're planning going nuclear in a big
9 way.

10 When someone asked a Chinese
11 official how they could justify going nuclear
12 with the higher cost of coal, they said, "Have
13 you any idea what it's costing us to deal with
14 the lung problems of our citizens?"

15 Anybody that's visited China is
16 well aware of the pollution in Chinese cities.
17 So, you know what? Yes, there's consequences
18 and I'm seeing America losing its leadership
19 position.

20 How are we going to control, and
21 maybe you don't like using that word, I'm a
22 Canadian; I'll get it -- I'll try and get away

1 with it -- how are we going to help the world
2 make good decisions about how to minimize the
3 risks and make the best decisions they
4 possibly can for the environment?

5 How is Abu Dhabi going to dispose
6 of spent fuel? It's not practical for them.
7 Canada -- the NWMO is estimating it'll be \$16
8 to \$24 billion to build a repository just for
9 Canadian fuel.

10 How could Abu Dhabi possibly
11 afford that? Our view, Securad's view, is
12 that we have to build a global repository for
13 the whole world and situated in the best rock
14 we can, etc. I'm not here to promote Securad
15 today.

16 The public wants action. I've
17 traveled -- I've followed this Commission
18 around. I'm a BRC groupie, and I've talked to
19 the public. When we went out to Hanford, I
20 drove across the country and I talked to the
21 voters. Virtually everybody wants to go
22 nuclear as quickly as we can and they can't

1 understand why we're not moving more quickly.

2 Now, they're operating from an
3 uninformed base. They don't understand that
4 nuclear is the most regulated industry in
5 America, but they want results. They've made
6 the decision that they -- it's better to go
7 green with nuclear power than it is to have
8 fossil fuels.

9 They want to get off foreign
10 fuels. They want to deal with the terrorist
11 threat, and they just can't understand why
12 we're delaying. As a Canadian, I want to see
13 American leadership. The world is benefitted
14 with American leadership, and I'd like to see
15 you reassert it. We've done well with it in
16 the past.

17 So, I've got a quick to-do list.
18 One, we need you to set the terminology for
19 the nuclear industry. We don't know -- I've
20 heard people talking about casks and canisters
21 and just using the word waste. I asked an NRC
22 commissioner at a hearing in Washington here

1 why is there no terminology?

2 Shouldn't the NRC set a
3 terminology? He said, "No." He said, "That's
4 not our job." He said, "Maybe the media will
5 do it." I said, "Yes, the media did do it.
6 They called it waste, and it's hurt us for
7 40 years." Okay?

8 It's not waste. It's used fuel.
9 It's like a Duracell battery where you've used
10 it one time, you've used three percent of the
11 available energy, and it's potential future
12 energy. It's not cost effective now to try
13 and recover it, but we should store it for
14 50 years in a monitored, retrievable storage
15 facility deep underground and be able to go
16 back when the technology and the cost -- and
17 it's more cost effective and when we have the
18 technology to reprocess.

19 We desperately need the loan
20 guarantees made more business-friendly. I
21 have no commercial interest in that. I want
22 that very clear, but if you want this industry

1 to move forward, we're trying to get
2 investment for our company.

3 Investors don't want to hear of
4 the projects that are going to take ten years
5 to get a return on investment. They need the
6 assistance of the government to provide
7 additional security for investment.

8 Basically, that's it, and I
9 appreciate your time. Thank you very much.

10 CHAIR SCOWCROFT: Thank you very
11 much, Mr. Brown, for your comments. Our next
12 presenter is Diane D'Arrigo of NIRS to be
13 followed by Jay Marx.

14 MS. D'ARRIGO: Yes, I'm Diane
15 D'Arrigo. I'm the reactive waste project
16 director at Nuclear Information and Resource
17 Service. You want trust. You have my
18 complete trust. I completely trust that this
19 body and anybody that you recommend be created
20 will advocate and promote the illusion that
21 there is a solution to an unsolvable nuclear
22 waste problem.

1 I also expect that -- well, I --
2 that's a frustration, but I believe that
3 that's a reality. As far as gaining public
4 trust, if there's no limit on the amount of
5 waste that's being produced and if there is no
6 sincere effort to have a goal at least of
7 isolating the waste from the environment,
8 whatever agency or committee is set up will
9 not have public confidence.

10 You can't convince people to
11 accept unnecessary serious risks unless you
12 deny the level of the risks. I have stated
13 more than once to this committee that you need
14 to substantively address, and I hope that you
15 will in the final report, the failed
16 reprocessing activity that took place in this
17 country, the only commercial reprocessing, to
18 address the current problems at that site at
19 Rust Valley, and what needs to be done to
20 protect the Great Lakes from that threat to
21 the water supply before entertaining new
22 reprocessing.

1 I don't before that -- I mean, I
2 hope that the Committee will do these things.

3 CHAIR SCOWCROFT: Thank you very
4 much, Ms. D'Arrigo. Our final speaker is Jay
5 Marx from Proposition One. The floor is
6 yours.

7 MR. MARX: Thanks very much. My
8 name is Jay Marx. Proposition One is for
9 nuclear disarmament and economic conversion to
10 a sustainable future.

11 The best indicator of the U.S.
12 government's attitude towards our nuclear
13 future is the charge and purview of this Blue
14 Ribbon Commission by restricting this
15 comprehensive review of our nuclear future --
16 of our nuclear policy to the back end of the
17 fuel cycle.

18 The President and the Secretary of
19 Energy have ensured that the most important
20 questions of our nuclear future do not get
21 asked let alone answered. After all, by the
22 time we wrestle with the questions of what do

1 we do with this nuclear waste that we're
2 generating, we've already accepted that we
3 must generate evermore toxic and radioactive
4 for tens and thousands, hundreds of thousands
5 of years this waste. Indeed, billions of
6 years.

7 Uranium-238 is radioactive for
8 4.5 billion years. That's about the life of
9 our planet. For our own selfish purposes,
10 then we do this.

11 At a fundamental level, how dare
12 we when there are clear, viable other options,
13 sustainable options, that are available to us?
14 And there most certainly are. Where do we get
15 off insisting to future generations that we
16 must leave this poisonous legacy whose
17 security we can never guarantee, whose toxic
18 legacy will last for all practical purposes in
19 our short lifetimes forever?

20 Of course, we do not fault this
21 Commission for fulfilling your charge. Your
22 work here cannot be easy, and I do not envy

1 you to figure out how to clean up and control
2 an essentially infinite mess.

3 I thank you for your time and your
4 service and more for engaging the public,
5 actually engaging the public as something that
6 too rarely happens in our democracy,
7 especially with regards to all issues nuclear.
8 It's not your fault that you've been asked to
9 answer the wrong questions.

10 I know you will, however, report
11 to the Secretary of Energy, and he will
12 eventually report to the President and perhaps
13 it all will eventually sift out to the
14 Congress and to the people.

15 I hope you don't mind taking this
16 opportunity to speak up the ladder as it were
17 and ask some of the questions that by rights
18 should have been asked well before the nuclear
19 horse is out of the barn or the waste out of
20 the barrel or the missile out of the silo.

21 I reference nuclear weapons
22 because, of course, our modern nuclear energy

1 program only exists because of nuclear
2 weapons, because of our efforts in the
3 Manhattan Project.

4 Further, we have to acknowledge
5 that as long as we are making nuclear power,
6 we are continuously creating more nuclear
7 proliferation risk. That is inescapable.
8 Plutonium does not exist in nature anymore.

9 It cannot be mined except from the
10 waste of uranium fission that nuclear energy
11 creates. So, from an administration that is
12 apparently working so hard to prevent nuclear
13 proliferation everywhere else on the planet,
14 it seems, to say the least, in Congress that
15 we would pursue an energy policy for ourselves
16 that entails a perpetual proliferation risk no
17 matter how we sugarcoat or minimize or most
18 ideal vitrify that risk. Plutonium, put it
19 under glass.

20 Why does the U.S. government
21 insist on supporting this industry? Who
22 really benefits? The current players. Does

1 the public benefit? Do the rate payers in
2 Florida benefit for paying for future nuclear
3 reactors, paying extra money that -- Florida,
4 that has so much sun, rate payers there need
5 to pay more?

6 I understand my time is up. Last
7 word about cost/benefit analyses and
8 opportunity costs. I hope the Commission
9 really hears and acts on the gentlemen
10 Mr. Kraft's earlier comment that a cradle to
11 grave analysis of the back end of the nuclear
12 cycle should and must really ask what
13 containment really costs us.

14 A billion dollars can buy
15 300 megawatts, give or take, of wind energy.
16 Maybe something similar on the line for solar.
17 How many billions of dollars does one nuclear
18 power plant cost, let alone the billions to
19 save and contain and try to contain the waste?

20 So, when we think about America's
21 nuclear future, please let's think about the
22 best way to contain nuclear waste, of course

1 not to create it. Thank you.

2 CHAIR SCOWCROFT: Thank you,
3 Mr. Marx. That concludes this session of the
4 Commission. We stand adjourned.

5 (Whereupon, the foregoing matter
6 was concluded at 11:54 a.m.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Blue Ribbon Commission on
America's Nuclear Future

Before: n/a

Date: 11-16-10

Place: Washington, DC

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