

BLUE RIBBON COMMISSION ON AMERICA'S
NUCLEAR FUTURE

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MEETING

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FRIDAY
MAY 13, 2011

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The Commission convened at 9:00 a.m. in the New Hampshire Ballroom at the Renaissance Dupont Circle Hotel, 1143 New Hampshire Avenue, Northwest, Washington, DC, Lee Hamilton, Chair, presiding.

MEMBERS PRESENT:

LEE HAMILTON, Chair
MARK AYERS
VICKY BAILEY
ALBERT CARNESALE
SUSAN EISENHOWER
JONATHAN LASH
ALLISON MACFARLANE
RICHARD MESERVE
ERNIE MONIZ
PER PETERSON
JOHN ROWE
PHIL SHARP

ALSO PRESENT:

TIM FRAZIER, Designated Federal Official
LAWRENCE KOKAJKO, US Nuclear Regulatory
Commission
JENNIFER UHLE, US Nuclear Regulatory
Commission
GLENN PODONSKY, US Department of Energy
JAMES O'BRIEN, US Department of Energy
MARY WOOLLEN, consultant to the Commission

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PUBLIC COMMENTERS:

ROBIN READ, NFWL
TOM COCHRAN, NRDC
DAN BROWN, Securad, Inc.
JUDY TREICHEL, Nevada Nuclear Waste Task Force
ARJUN MAKHIJANI, IEER
KATHERINE FUCHS, Alliance for Nuclear
Accountability
GEOFF FETTUS, NRDC
KARA COLTON, Energy Communities Alliance
MICHELE BOYD, PSR
MICHAEL McLAY, MJM Ocean Industries
MICHAEL CONLEY, Thorium Energy Alliance
ROBERT ORR, JR., Thorium Energy Alliance
BRYAN L. BENNET, formerly of the USAF
PARKER GRIFFITH, Thorium Energy Alliance
DIANE D'ARRIGO, NIRS
ALEX CANNARA, Thorium Energy Alliance

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

2 9:01 a.m.

3 MR. FRAZIER: I'd like to welcome
4 you to the meeting of the Blue Ribbon
5 Commission on America's Nuclear Future.

6 My name is Tim Frazier. I'm the
7 Designated Federal Officer for the Commission.

8 I want to welcome you here. And I know that
9 more commissioners are on their way in. We've
10 got a busy day. So we're going to try to stay
11 on schedule.

12 Congressman Hamilton, sir, whenever
13 you're ready.

14 CHAIRMAN HAMILTON: Well, good
15 morning to everyone. Thank you all for
16 coming.

17 Let me first simply observe that
18 General Scowcroft has been ill. I understand
19 he's recovering now, and we wish him godspeed
20 in that recovery. It may be that he is
21 joining us by telephone. I am not finally
22 informed on that. But in any event, we fully

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1 understand his absence today, and we wish him
2 well.

3 The purpose of this meeting of the
4 Blue Ribbon Commission on America's Nuclear
5 Future is twofold. Our first two
6 presentations will cover reviews being
7 conducted by the federal government in
8 response to the natural disaster and resulting
9 nuclear accident at the Fukushima Daiichi
10 plant in Japan.

11 Please note that the purpose of
12 today's presentations is not to get into the
13 myriad details of what happened and why. The
14 staff has prepared a background memo on the
15 details of the event. That memo was provided
16 to all commissioners and is posted on the
17 Commission's website.

18 The purpose of today's briefings is
19 to hear from the US Nuclear Regulatory
20 Commission and the United States Department of
21 Energy about what steps are being taken to
22 review the safety of domestic nuclear

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1 facilities in light of the events in Japan.

2 After those presentations, we will
3 then ask the co-chairmen of the Commission's
4 three subcommittees to deliver presentations
5 to describe the recommendations that are
6 emerging from their work. We will discuss our
7 plans for the subcommittee reports and the
8 draft report of the full commission later
9 today.

10 As always, we will end our meeting
11 by hearing from any member of the audience who
12 wishes to speak up. A sign-up sheet for the
13 public comment period is available now. It
14 will close at 2:00 p.m.

15 We've allowed an hour for public
16 comment, and we look forward to hearing what
17 people have to say. Speakers will be limited.

18 Of course that will depend on the number of
19 speakers and the amount of time that we have.

20 Before we get started, I'd like to
21 say a few words about the tragedy that has
22 struck our friends in Japan.

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1 Commissioners Ayers, MacFarlane,
2 Peterson and General Scowcroft visited Japan
3 in February just a few weeks before the
4 earthquake and the tsunami struck. They were,
5 they have told us, deeply impressed by the
6 hospitality of our Japanese hosts and by the
7 time and effort they devoted to our visit.

8 We know that many of the same
9 people who were so generous with their time
10 during that visit are now struggling to get
11 the situation under control and to minimize
12 the public health impacts of the accident.
13 Our hearts go out to them, to those who
14 perished in the earthquake and tsunami, and to
15 those whose lives have been forever changed by
16 that disaster.

17 I open the floor for just a moment
18 to see if any of the commissioners would like
19 to further comment.

20 (No response.)

21 CHAIRMAN HAMILTON: If not, we will
22 proceed with the speakers of the morning. Our

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1 first speaker will be Lawrence Kokajko, the
2 Acting Deputy Director of the Office of
3 Nuclear Materials Safety and Safeguards at the
4 U.S. Nuclear Regulatory Commission. I'd ask
5 him to take the podium, if he would.

6 As many of you know, the Chairman
7 of the NRC has directed that a review be
8 conducted of the - excuse me - conducted of
9 the safety of U.S. commercial nuclear
10 facilities in light of the events at the
11 nuclear power station in Japan.

12 We recognize that the review is
13 still ongoing, and the complete results of the
14 review will not be available until this
15 summer. But we have asked the NRC to share
16 what information they can today, particularly
17 as it relates to the storage of spent nuclear
18 fuel.

19 Mr. Kokajko, thank you for joining
20 us, and you may proceed.

21 MR. KOKAJKO: Well, thank you, sir.
22 My name is Lawrence Kokajko. I'm the Acting

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1 Deputy Director for the Office of Nuclear
2 Materials Safety and Safeguards at the U.S.
3 Nuclear Regulatory Commission.

4 The reason I'm acting is because
5 Dan Dorman, who is the Deputy Director for the
6 Office, is on the Japanese Response Task Force
7 and could not be here today.

8 Also, my real job is I'm the
9 Division Director for the Division of High-
10 Level Waste Repository Safety in that same
11 office.

12 And you'll have to forgive my edit
13 typo here, but we all know that the tragic
14 events in Japan was one of the largest ever
15 recorded off the eastern coast of that
16 country. And the power plants did shut down
17 as they were designed to do. And Unit 4, of
18 course, was the fuel at the time, with all the
19 fuel in the spent fuel pool.

20 The plant diesel generators did
21 come on, and then it was inundated by a
22 tsunami which disrupted all power to the

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1 facility. And as the BRC staff memorandum to
2 the BRC Commission points out, the batteries
3 eventually died and of course the event took a
4 much more serious tone.

5 We are missing many important
6 pieces of information about the event of what
7 quite happened at the facility. And as the
8 situation continues to stabilize and the
9 emergency response phase begins to wind down,
10 we expect more time and attention can be
11 shifted toward obtaining the missing
12 information.

13 And I know there are many questions
14 here today regarding the performance of the
15 facility itself, including the spent fuel
16 pools at Fukushima Daiichi. Until we have a
17 more complete understanding of the event
18 sequences and specific systems' responses,
19 many of the questions must remain unanswered
20 for now.

21 Although many important details are
22 missing, there is enough information about the

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1 event to warrant specific actions by the NRC.

2 On March 11th, the NRC began a monitoring
3 phase of the emerging events in Japan. And
4 that monitoring is continuing to this day.

5 This group in the Operations Center
6 does provide advice to the U.S. government,
7 including the U.S. Embassy in Japan. We also
8 provide advice to the government of Japan, and
9 we have NRC experts not only here in
10 headquarters, but also on the ground in Japan
11 who are experts in reactor systems, as well as
12 protective measures. And they are assisting,
13 again, the Japanese government and as well as
14 other stakeholders such as the IAEA.

15 On March 18th, we did issue an
16 Information Notice and provided - this
17 information essentially provided a high-level
18 discussion of the earthquake as we knew it at
19 the time. And it essentially allowed the
20 licensees to have the benefit of our
21 information so that they could consider it for
22 other actions that they may need to take

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1 themselves.

2 We also provided in that
3 Information Notice, a discussion of the
4 pertinent regulatory requirements such as
5 Station Blackout, as well as what we call
6 B.5.b, which is Advanced Accident Mitigation.

7 For our inspector staff, and we do
8 have inspectors on site, we issued two
9 temporary instructions. The inspectors were
10 required to look at independently - to look at
11 and independently assess the adequacy of the
12 actions taken by the licensee, inspect
13 capabilities to mitigate conditions beyond
14 design basis, as well as do additional fact-
15 and-data-gathering in case we need to take
16 future regulatory actions.

17 The second temporary instruction
18 asked the inspectors to determine if the
19 severe accident mitigation guidelines were
20 available, and how were they being maintained,
21 and then determine the nature and the extent
22 of the licensee implementation of those

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1 guidelines in training, as well as in
2 exercises.

3 But more significantly two days
4 ago, we issued NRC Bulletin 2011-01. And
5 bulletins at the NRC address significant
6 issues requiring great urgency, and usually
7 require actionable responses by the licensee.

8 And this is the first bulletin that the NRC
9 has issued since 2007.

10 The events in Japan highlight the
11 importance and potential versatility of
12 mitigating strategies for potential loss of
13 large areas of the plant due to explosions or
14 fires.

15 Therefore, the NRC sought
16 comprehensive confirmation that the licensees
17 are maintaining equipment and strategies to
18 satisfy the regulatory requirements to
19 maintain and restore cooling to the core,
20 containment or spent fuel pools due to
21 explosions or fires.

22 In this bulletin, we are requiring

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1 that within thirty days, information to verify
2 that the equipment necessary to execute the
3 mitigating strategies are available and
4 capable of performing their intended function,
5 as well as that the operating staff is
6 appropriately trained and available to
7 implement the mitigation strategies in the
8 current configuration of the facility.

9 Separately, we are requiring within
10 60 days that the licensees must respond to a
11 specific set of questions. These questions
12 concern the maintenance, testing, and
13 availability of equipment relied on for
14 mitigation, updates of guidance on mitigation
15 strategies, as well as the availability of all
16 site support.

17 Based upon the information that is
18 provided, the NRC may determine additional
19 efforts are needed to ensure compliance with
20 existing regulatory requirements and whether
21 enhancements to the regulatory framework is
22 necessary.

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1 On March 23rd, the Commission
2 authorized an establishment of a senior-level
3 task force to review the available information
4 on the events in Japan. This task force will
5 conduct a methodical and systematic review of
6 the regulatory requirements, programs,
7 processes and their implementation. They will
8 determine if the NRC should make additional
9 improvements to its regulatory system and
10 provide recommendations to the Commission for
11 policy direction and implementation.

12 The task force will recommend near-
13 term actions, as well as identify framework
14 and topics for longer-term review.

15 The NRC Task Force has been charged
16 with several specific things that are outlined
17 in its charter. They will independently study
18 the events at Fukushima, identify relevant and
19 important topics for application to the U.S.
20 reactors, including spent fuel pools, consult
21 with agency experts, interact with domestic
22 and international stakeholders, identify a

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1 framework and topics for review and assessment
2 of the longer-term effort, and formulate these
3 recommendations and provide it to the
4 Commission, to the NRC, in a report that is
5 due in July 2011.

6 And yesterday Dr. Charles Miller as
7 the task force leader, presented its initial
8 briefing to the Commission in a public
9 meeting, and that material will be available
10 for public review.

11 The review approach will focus on
12 Fukushima exclusively and all those issues
13 that are known to date. And it will include
14 insights from past lessons learned efforts
15 such as Three Mile Island.

16 They will take a defense in depth
17 approach looking at the prevention, mitigation
18 and emergency preparedness of a facility. And
19 they will look at protection from natural
20 phenomenon, including design basis natural
21 events and consideration of beyond design
22 basis natural events.

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1 They will look at the mitigation of
2 the long-term station blackout, including
3 single or multiple-unit failures and events,
4 emergency preparedness, and the implications
5 for our programs. And one of the goals is to
6 assure that any new requirement that comes out
7 of this review is done in an organized and
8 thoughtful way.

9 One of the focus areas of the task
10 force is the methods used to evaluate
11 protection from natural-occurring hazardous
12 phenomenon.

13 In doing so, they will assess the
14 design basis derived from the likely and
15 unlikely events, as well as those appropriate
16 safety margins evaluated for plant performance
17 for beyond design basis events.

18 They will also include an
19 evaluation of external challenges that could
20 lead to station blackout, including seismic
21 activity, tsunamis, storm surges, upstream dam
22 failures, as well as precipitation and

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1 internal flooding. They will consider related
2 and sequential external events such as an
3 earthquake and tsunamis.

4 In particular, the task force is
5 asked to examine survivability of emergency AC
6 power for those things that are beyond design
7 events, as well as include the evaluation of
8 alternate sources of AC power for safety
9 equipment in case the normal sources are lost.

10 The task force will also review
11 steps that can be taken to mitigate the
12 effects of long-term station blackout such as
13 strategies to prevent damage to the core, or
14 spent fuel, or spent fuel pools, and prevent
15 the releases of radionuclides, as well as look
16 at the procedures and training for making
17 appropriate emergency response personnel
18 available and to ensure that their response is
19 effective and protective.

20 Although much of the task force
21 will focus on primary reactor systems, the
22 performance of the spent fuel pools will also

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1 be evaluated and it will consider additional
2 strategies to prevent the damage to the fuel
3 located in the pools. And these strategies
4 could include assessing heat removal
5 capability such as water and air cooling,
6 enhancing air coolability by relocating spent
7 fuel, and assessing instrumentation
8 availability.

9 Mitigation strategies use a
10 combination of procedures, some of which are
11 voluntary by the industry. They will consider
12 whether additional integration among these
13 procedures is necessary and would enhance the
14 training and increase the capability to
15 implement overall mitigation. This will
16 require review of the emergency operating
17 procedures, which are required, severe
18 accident mitigation guidelines, and extensive
19 damage mitigation guidelines.

20 In addition to the prevention of
21 damage to the fuel in the pool, they will also
22 consider strategies to mitigate the releases

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1 from potentially damaged fuel in the spent
2 fuel pools. These could include filtration
3 monitoring and scrubbing of potential
4 releases, hydrogen control measures, pressure
5 control in secondary containments in spent
6 fuel pool buildings, and instrumentation
7 availability. Similarly, as I noted before,
8 the procedures will be assessed as well.

9 And one final point about the task
10 force, they have also been asked to look at
11 cross-cutting issues that may be relevant such
12 as emergency planning, incident decision
13 making, command and control, radiation
14 monitoring during the event, and the
15 prophylactic use of potassium iodide.

16 The current assessment, and this
17 was provided to our commission yesterday in
18 its 30-day update, was that based upon the
19 initial review of the available information,
20 the task force has not yet identified any
21 issues that undermine our confidence in the
22 continued safety and emergency planning of the

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1 U.S. commercial nuclear power plant fleet.

2 The task force review is likely to
3 make recommendations to enhance safety and
4 preparedness, but we will not know the outcome
5 of that until later this year.

6 The task force has several next
7 steps. If there is any information of course
8 that derives from the review of the Fukushima
9 Daiichi event which indicates a concern with
10 existing safety requirements, the NRC has a
11 full range of regulatory options to require
12 licensees to make immediate changes to
13 existing procedures or systems. They will
14 continue its review and consider their
15 implication for the U.S.

16 We will continue to evaluate the
17 results from the instructions that we've given
18 to our inspectors. A 60-day update is due on
19 June 16th, and a final task force briefing is
20 scheduled currently for July 19th of this
21 year, and the report will be made public in
22 July after - probably after the briefing.

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1 The task force in its report will
2 identify those actions that the NRC must
3 undertake for long-term effort to better
4 understand the implications and the lessons
5 from the Japanese earthquake and tsunami.

6 I'd like to close my presentation
7 and ask for questions. Thank you.

8 CHAIRMAN HAMILTON: Okay. Are there
9 any questions from commissioners at this
10 point?

11 Phil.

12 MEMBER SHARP: Thank you very much
13 for your report. My question is about the dry
14 cask storage.

15 We've seen in the media very little
16 about what was onsite there. And my
17 presumption is that so far we're unaware of
18 any real damage to it.

19 But I guess I would like to - I
20 think we should know, and especially before we
21 come out with our report, whether there are
22 any damage to the cask, whether they sustained

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1 a hit by the water, as well as the thing and
2 what do we know about them. I'm sure that was
3 not the first order of business given the
4 nature of the accident.

5 MR. KOKAJKO: Yes, sir. My
6 understanding that there was dry casks onsite.

7 I don't recall the number, but I understand
8 it's about 400 or so fuel assemblies are in
9 dry cask storage.

10 They have -- the location of where
11 their dry - vertical dry casks were was
12 further back from the shore and elevated
13 higher.

14 They were, I understand, impacted
15 by the tsunami, but they were not impacted - I
16 don't even think they were knocked over. They
17 may have been moved, but I don't think they
18 were knocked over.

19 That's about all I know about that
20 at this time. But that is something that we
21 clearly have an interest in, and we are very
22 interested in the robustness of their dry cask

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1 storage systems.

2 MEMBER SHARP: Well, I - just a
3 little - it would be very useful, I think, for
4 our report since we are likely to conclude
5 like as widespread conclusion about the high
6 safety value of dry cask storage and to know
7 whether or not there really was any
8 discernible damage.

9 So whether somebody is really going
10 to go in there and inspect those carefully, I
11 don't know what that would take. But I just
12 hope that that is on the agenda of - for the
13 Japanese in particular, but for us as well.

14 MR. KOKAJKO: We clearly all have an
15 interest in that. And we have identified that
16 as an area we're interested in exploring
17 further.

18 Where it exists on the priority
19 scheme for Japan -

20 MEMBER SHARP: Sure.

21 MR. KOKAJKO: -- I think is a
22 little lower.

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1 MEMBER SHARP: I can imagine.

2 CHAIRMAN HAMILTON: Okay. Richard.

3 MEMBER MESERVE: Thank you. You
4 obviously have a large number of things
5 underway.

6 I have two questions for you. One
7 is you did emphasize that the issuance of a
8 bulletin is a rather unusual event. Not
9 unprecedented, but you haven't done one for
10 several years.

11 And I'm curious whether you could
12 say something whether the pressure or reason
13 for issuance of the bulletin was a result of
14 your early inspections and what you had
15 discovered as to the adequacy of the state of
16 the equipment to deal with severe accidents.

17 MR. KOKAJKO: I don't know all the
18 information input that went into that, but
19 it's my understanding that some of the initial
20 inspections did lead to this, as well as the
21 INPO, the Institute of Nuclear Power
22 Operations, and NEI assessing internally what

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1 may have transpired. And they thought it was,
2 you know, provided that input to us.

3 The Information Bulletin which went
4 out almost, you know, relatively quickly also
5 alerted the licensees that they needed to take
6 a look at this.

7 And the TIs, I think, the results
8 of some of the TIs did give us a view that we
9 felt we needed to ask for this information.

10 And we, as you know, the 30-day and
11 60-day response is a pretty quick response.
12 And other things could grow out from those
13 reports.

14 MEMBER MESERVE: I wonder if you
15 could say a little bit more about what the NRC
16 understands the situation is at Unit 4 at the
17 Fukushima plant.

18 There were early reports of a
19 complete drain-down event and possibility of
20 very major fuel damage. Subsequent reports
21 have been that they've taken some samples, as
22 I understand it, from the water that's in the

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1 pool, and it doesn't reflect as extensive
2 damage as one would have expected if that
3 event had occurred.

4 I'm quite curious as to whether
5 there are any lessons about risks from spent
6 fuel pools that your - well, I'm interested in
7 the status in whether there's anything you can
8 say about accident progression and
9 particularly the spent fuel pool.

10 MR. KOKAJKO: I don't have a lot of
11 information about that. I will say that I
12 have a lifeline here today with me, and I will
13 -

14 (Laughter.)

15 MR. KOKAJKO: Jennifer, do you have
16 information on Unit 4? You never go anywhere
17 without a lifeline.

18 MEMBER MESERVE: I'm laughing
19 because Jennifer used to work for me in my
20 office. She was my lifeline then, too.

21 (Laughter.)

22 MS. UHLE: We have - there have been

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1 differing understandings along the way about
2 Unit 4 spent fuel pool. As you're saying,
3 occasionally they - people were surmising -
4 and, again, I want to say this is all
5 presumption because there's going to be a lot
6 that's going to be learned as the Japanese
7 further pursue the recovery and then the final
8 dispositioning of the site.

9 There were some concerns that there
10 was a partial, if not full, drain-down. There
11 were obviously some - if anyone had seen
12 photos that have been publicly available,
13 there were some emissions, I would say. Was
14 it smoke? Was it steam coming from the
15 building? That wasn't quite clear.

16 So at this point I think the
17 Japanese, if you do go online, the Japanese
18 are concluding that there was no fuel damage
19 and that if some of the fuel were damaged, it
20 would have been because of mechanical damage,
21 perhaps something falling into the pool.

22 But, again, this is all conjecture

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1 at this point until we can actually -- or the
2 Japanese can get into the pools and verify for
3 themselves. Although they have tried to use
4 imaging by putting in a camera. And at this
5 point, the images online are showing that the
6 pool is completely filled at this point and
7 the rods look intact.

8 So I don't think that answers your
9 question because we don't really have the
10 final answer.

11 MEMBER MESERVE: I think it is very
12 important for us to understand the progression
13 of the events -

14 MS. UHLE: Yes.

15 MEMBER MESERVE: -- in Unit 4.

16 MS. UHLE: Right. Yes, we have
17 analyzed the events in the spent fuel pool.
18 We've probably done about six or seven studies
19 on the spent fuel pools over the years. Most
20 recently the study that was done for the
21 aircraft-impact analysis after 9/11, that was
22 completed in 2004. National Academies

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1 followed up with a report on that.

2 And so we do - NRC does have a very
3 good understanding of the progression in a
4 drain-down event. Now the probability of
5 inducing that drain-down where at the site,
6 where the hole - the penetration maybe failed,
7 where that location is, how large that is, is
8 obviously something that has to be analyzed in
9 terms of a probability. So, there's
10 uncertainty there.

11 But given a certain flow rate out
12 of the pool for whatever reason, we have a
13 very high confidence in our technical ability
14 to analyze the event. It's based, in part, on
15 some zirconium fire studies that were done at
16 the Sandia National Laboratory. We have done
17 that for BWR assemblies, and we're following
18 up with PWR assemblies right now and validated
19 our codes to ensure that we can predict the
20 heat transfer.

21 And then under certain
22 circumstances, zirconium fire and propagation,

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1 but that's only - that zirconium fire
2 propagation only occurs under certain
3 conditions.

4 CHAIRMAN HAMILTON: Okay. The Chair
5 has Per, and then Allison. Ernie, did you -
6 and Ernie, and then Jonathan.

7 Per.

8 MEMBER PETERSON: Thank you, Mr.
9 Chairman. My questions, I want to pull on a
10 couple of technical threads.

11 Before doing that, it's, I think,
12 useful to note that this commission is
13 comprised to be a policy commission, not a
14 technical commission. So we're interested in
15 learning about the technical details of what
16 happened, but the policy dimensions are also
17 important.

18 I'd just like to note that in - as
19 these events have unfolded, the value of
20 having an independent and scientifically
21 technical - scientifically and technically
22 capable regulatory agency available to monitor

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1 this accident, provide advice to us and to the
2 Japanese, I think, should be emphasized.

3 Because indeed what the NRC has
4 been doing these last two months has been very
5 positive in terms of reducing and mitigating
6 the consequences to Japan and also giving us
7 the opportunity to learn lessons here.

8 So a couple of the technical
9 dimensions that I'd like to dig into just a
10 little bit more relate to the nature of this
11 accident. The Three Mile Island accident was
12 one that was internally initiated by equipment
13 failures and human failure or human error.
14 And we've learned a lot from that. And a
15 number of measures that we have taken have
16 greatly reduced frequency of those types of
17 initiating events in our own plants.

18 This is our first experience with
19 an extreme externally-initiated - extreme
20 external event initiated type of accident, and
21 there's two areas where I'd like to learn a
22 little bit more about lessons. One is I think

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1 we've been finding that our capacity to
2 measure things inside plants is not that
3 great, the instrumentation available,
4 particularly for water level measurement in
5 spent fuel pools. So where are we going with
6 that type of lesson?

7 And then the second dimension is
8 the tremendous value of defense in depth that
9 comes from having the capability to hook up
10 portable equipment to recharge batteries, to
11 inject water, and where are we going with that
12 type of lesson as well?

13 If you could just - those two
14 areas, maybe say a little bit more about
15 what's happening.

16 MR. KOKAJKO: First, many of the
17 technical details that I think you may be
18 interested in we're still assessing ourselves.

19 And, again, we - there's a lot of information
20 is still speculation. And until that gets a
21 little more known, I'm not sure - quite sure
22 we can - how much we'll be able to talk about

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1 that for now.

2 Given what we do know, a number of
3 things have arisen that we would - gives us
4 pause to question. For example, the location
5 of the switchgear, why did Japan site it where
6 they did and that it was susceptible to such
7 an event? Yes, they did plan for a tsunami,
8 but that could be of something very simple
9 that we would need to factor into our planning
10 for future reactors, for example.

11 In terms of - and, in fact, that's
12 also one of the things we're looking at
13 internally in the U.S. is to understand the
14 location of equipment.

15 In terms of the comparison to, say,
16 TMI, I'm hesitant always to make comparisons
17 because I don't want to sound like I'm piling
18 on, there was a lot of operator error issues,
19 as well as equipment malfunctions, at TMI.

20 We don't see right now anything
21 that would say that Fukushima Daiichi
22 operators did anything wrong. And as -- I

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1 think I've heard that there's up to three
2 deaths there, which are tragic.

3 One of the - I guess the things
4 that apply to us right now is have we thought
5 through the planning, the benefit of the
6 planning? Have we trained the operators to
7 handle things that are unforeseen?

8 It's easy to have a simulator to
9 say, well, I'm going to plan for a large-break
10 LOCA and everything is geared toward that.
11 It's a little different when you plan for
12 multiple natural phenomenon happening at a
13 multiple-unit event and everything - the whole
14 world is falling around you.

15 I'm not quite sure we've asked for
16 that simulation yet, but it's something that I
17 think we're going to have to think about. And
18 that's why the Information Notice went out,
19 that's why the Temporary Instructions went
20 out, and that's why the bulletin went out is
21 to look at what could be done beyond design
22 basis.

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1 Does that address your question,
2 sir?

3 MEMBER PETERSON: Thank you.

4 CHAIRMAN HAMILTON: Allison, please.
5 I'm sorry, did you have a further -

6 MR. FRAZIER: Come to the
7 microphone, please.

8 MS. UHLE: I can add some
9 particulars about the instrumentation
10 capability at the U.S. plants -

11 MR. FRAZIER: Thank you.

12 MS. UHLE: -- if you'd like me to
13 do that.

14 MR. FRAZIER: Yes, please.

15 MS. UHLE: Okay. There are several
16 requirements in our regulations about
17 instrumentation capability looking at accident
18 situations and also going into what we would
19 say unforeseen accident situations or beyond
20 design basis accidents.

21 If you look at the general design
22 criteria, General Design Criteria 13, 19, and

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1 64 all relate to having instrumentation
2 available. After - certainly after TMI, the
3 focus on the robustness of that
4 instrumentation and its range of measuring
5 capability was looked at.

6 IEEE started with a standard that
7 NRC adopted, as well as ANS, NRC adopted and
8 turned into Regulatory Guide 1.97, which is
9 looking, again, at that instrumentation
10 capability.

11 So there are requirements in our 10
12 CFR under 50.34 which is our - if anyone's
13 interested in that particular one, 50.34(f)
14 indicates what the post-TMI action items were.

15 And there's a whole slew of instrumentation,
16 including the ability to monitor activity in
17 the core.

18 That's been replaced by more
19 updated methods of being able to infer core
20 damage through hydrogen measurements in the
21 containment. And, of course, you know,
22 temperatures, water levels, there's

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1 temperature measurements and water level
2 measurements in the sumps.

3 And all of these are of these range
4 of - measurement range have -- are increased
5 so that they are - well, I shouldn't say
6 increased. That they are large so that they
7 go beyond what the design basis would be, and
8 they are required to be robust to handle these
9 design basis accident conditions and, also, to
10 have an extended range of conditions for
11 beyond design basis as well. So there is
12 quite a bit of instrumentation available.

13 What happened at Fukushima, whether
14 or not Japan had these same requirements,
15 well, again, at this stage, like Lawrence was
16 saying, we don't know for sure.

17 CHAIRMAN HAMILTON: Okay. Allison
18 and then Ernie.

19 MEMBER MacFARLANE: Okay. I have a
20 couple questions. The first set has to do
21 with Fukushima, and the second set has to do
22 with the U.S. situation.

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1 So let me start with the Fukushima.
2 And, Jennifer, I don't think you should go
3 very far.

4 (Laughter.)

5 MEMBER MacFARLANE: All right. So
6 starting with Fukushima, I wonder if - in the
7 past few days I've seen pretty amazing video
8 images of Pool 3, which looks pretty terrible
9 in terms of all the debris that fell into it.
10 I wonder if you guys have any more status
11 updates on that, or Pool 1 or Pool 2.

12 And then if you could also say
13 something about if you have any thinking on
14 why these pools seemed to run into trouble
15 earlier than expected.

16 MR. KOKAJKO: In terms of why they
17 came earlier than expected, the plant did
18 suffer a severe, catastrophic earthquake which
19 was, we know, beyond design basis. I think
20 the magnitude -

21 MEMBER MacFARLANE: Actually, the
22 ground shaking wasn't quite beyond design

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1 basis, but -

2 MR. KOKAJKO: I think it's unknown,
3 and I think we've made the assumption that it
4 was.

5 MEMBER MacFARLANE: Okay.

6 MR. KOKAJKO: And the plant did
7 behave generally as we thought it would. It
8 shut down.

9 MEMBER MacFARLANE: Right.

10 MR. KOKAJKO: The diesels came on,
11 and it began to respond. We ourselves
12 couldn't believe some of the pressures that we
13 were seeing within the primary containment.
14 And it was pretty severe.

15 The pools themselves as well,
16 having this pool that's sort of up in the air,
17 it was, you know, this design was geared
18 toward a refueling operation. It wasn't meant
19 for long-term storage.

20 It was meant for refueling. And it
21 was meant to help convey that from the, you
22 know, you take off the drywell head, you flood

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1 it up, you refuel, you take the spent fuel and
2 you put it to the refuel spent fuel pool, and
3 there was a view that we would have some
4 availability, get it out when it was necessary
5 to - the government would take it.

6 The pool at Number 4, as you
7 probably know, had - was offloaded.

8 MEMBER MacFARLANE: Yes.

9 MR. KOKAJKO: And it had fresh used
10 fuel, which has a very high heat load. That
11 wasn't so much true in Units 1, 2, and 3. And
12 some of that fuel had been taken to dry cask
13 storage at that time.

14 Again, I don't have the numbers,
15 but I believe your BRC report does -

16 MEMBER MacFARLANE: Yes.

17 MR. KOKAJKO: -- have that in
18 there.

19 MEMBER MacFARLANE: I know the
20 numbers.

21 MR. KOKAJKO: In terms of what the
22 other pools are, again, I think there's much

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1 less heat load. There's older fuel that's in
2 there.

3 MEMBER MacFARLANE: Right. Yes, but
4 there was still water loss in those pools.

5 MR. KOKAJKO: There still was water
6 loss.

7 MEMBER MacFARLANE: So -

8 MR. KOKAJKO: But the severity of
9 that was not as great as 4.

10 MEMBER MacFARLANE: Right, but it
11 maybe wasn't quite what was expected. So it
12 was more than what was expected. So that's
13 what I'm trying to know - understand whether
14 you guys have addressed that issue yet.

15 MR. KOKAJKO: In terms of Japan, the
16 answer is we're aware of it. And Japanese
17 government and the NISA, as well as Tokyo
18 Electric, are trying to handle that. What we
19 want to do is get the information from them
20 and to assess it for our plants here.

21 MEMBER MacFARLANE: Okay. All
22 right. Let's move on to the U.S. situation.

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1 So this National Academy study that came out
2 in 2005-2006, were all their recommendations
3 instituted at all U.S. reactors?

4 MR. KOKAJKO: The National Academy
5 study?

6 MEMBER MacFARLANE: Yes.

7 MR. KOKAJKO: I'm not sure I could
8 say that.

9 MEMBER MacFARLANE: This is about
10 the spent fuel pools.

11 MR. KOKAJKO: In terms of the heat
12 loading, we know that it depends upon a number
13 of things, the design of the refueling
14 systems. And the spent fuel pools may or may
15 not be safety related. It depends upon the
16 design and its framework in the facility.

17 We do know that typically the spent
18 fuel pool cooling has - is tied to the
19 diesels, but it's not one of the initial loads
20 that would come on in a post-accident
21 situation. Again, that's something that we're
22 going to be assessing. And I know that

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1 Charlie Miller and his team are working on
2 that.

3 MEMBER MacFARLANE: Well, you know,
4 one of the - a couple of the recommendations
5 in that National Academy report were to
6 redistribute the spent fuel in the pool so
7 that you didn't have all the hot fuel next to
8 each other.

9 And the other - another one was -
10 MR. KOKAJKO: Yes, they do that.

11 MEMBER MacFARLANE: -- to install
12 sprinkler systems. If the roof caves in, I
13 don't know how your sprinkler systems help
14 you, but anyway.

15 MR. KOKAJKO: I don't know that - I
16 don't know of many plants, if any plants, have
17 a sprinkler system. I do know that there is
18 cooling -- standard spent fuel cooling systems
19 at the facilities. I will say that there is a
20 checkerboard pattern approach -

21 MEMBER MacFARLANE: Right.

22 MR. KOKAJKO: -- to try to move the

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1 warmer fuel away from the cooler fuel.

2 MEMBER MacFARLANE: And so - and
3 another thing I think that the National
4 Academy report recommended, although I may be
5 wrong about this, but I'm pretty sure that it
6 recommended additional studies. It sounds
7 like they weren't carried out because if your
8 last study on water loss in the pools was in
9 2004, then -

10 MR. KOKAJKO: Yes, I don't know how
11 much studies were done. I do know that, as
12 Jennifer pointed out, there were fire studies
13 that the NRC had done in relation to spent
14 fuel pools and had been doing them for some
15 time.

16 MEMBER MacFARLANE: So then my final
17 question is why not just move - why not get
18 ahead of the curve here and just go back to
19 low-density racks? That would - that would
20 ameliorate a lot of these problems.

21 MR. KOKAJKO: That's certainly
22 something for consideration. But in order to

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1 do that, you may have to take warmer fuel out
2 and put in dry cask storage sooner.

3 MEMBER MacFARLANE: Right. And, you
4 know, some of these new dry cask storage
5 systems are pushing it to three years after
6 discharge. So -

7 MR. KOKAJKO: Three to five, you
8 know, where one draws the line -

9 MEMBER MacFARLANE: There's a lot of
10 older fuel in these pools. And this is not a
11 - this is not a complicated problem. The only
12 sticking point is the price tag, which isn't
13 really that high relative to losing a reactor
14 and the consequences that follow along with
15 that.

16 So it just seems to me that it's
17 fairly straightforward to carry this out. You
18 just figure out who you attach that cost to
19 and move on.

20 MR. KOKAJKO: The NRC is taking a
21 look at what could be required in that domain.

22 I know that the utilities have thus far said,

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1 you know, if they moved, you would have a cask
2 that's only geared for a certain heat load.

3 If you put warmer fuel in there, it
4 may only be half full.

5 MEMBER MacFARLANE: Yes, I know, but
6 you don't have to put the warmer fuel in
7 there. You can put colder fuel.

8 CHAIRMAN HAMILTON: Ernie, go ahead.

9 MEMBER MONIZ: Yes, I have two
10 questions, but the first is to go back just to
11 make sure I understand, try to clarify the
12 discussion earlier on Pool Number 4.

13 So I guess about a month or so ago
14 I thought I heard a definitive statement from
15 the NRC that Pool 4 had been drained. What I
16 understood now is that that's unclear?

17 MR. KOKAJKO: The information that I
18 have, and I think as Jennifer has pointed out,
19 that they're still wondering about whether or
20 not it was fully drained or not. There's still
21 some uncertainty.

22 MR. MONIZ: And then - well, it's a

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1 couple system, obviously. And then what do
2 you think we understand, or not, about
3 explosion in Pool 4 Building, and to what
4 extent did the -- having the fresh core in
5 there drive whatever combination of water
6 loss, explosion, et cetera, took place?

7 MR. KOKAJKO: That's something that
8 is - I know that has been discussed
9 internally. And right now it would be
10 speculative to try to say we understand the
11 entire sequence of events that happened at
12 that time. And that's - but I will say that
13 is something that we're highly interested in.

14 MEMBER MONIZ: The simulations at
15 Sandia and Oak Ridge, I think, are addressing
16 this. Are those integral to the NRC study?

17 MR. KOKAJKO: The NRC is evaluating
18 the need for additional studies as well. I
19 understand that that will be factored in - or
20 elements of it will be factored in.

21 MEMBER MONIZ: Okay. And then a
22 question that goes a little bit beyond the

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1 specific investigation, but how is the
2 investigation, the ongoing investigation
3 intersecting with license extension
4 considerations?

5 MR. KOKAJKO: That's a very
6 interesting question. As you know, there was
7 a facility that was granted renewal around the
8 time of the event. It's my understanding that
9 that will have to be assessed and that will be
10 addressed by the task force for what longer-
11 term actions may occur. I do not know what
12 the outcome will be yet, though.

13 MEMBER MONIZ: Because, again, I
14 mean, I've heard some statements, some
15 definitive statements made that then don't
16 seem to stick, to be perfectly honest.

17 MR. KOKAJKO: In terms of, you know,
18 the intersection of this event and license
19 renewal, we will have to wait and see what the
20 task force recommends. Because I view that
21 whatever the task force recommends may impact
22 current operating fleet regardless of their

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1 renewal status.

2 MEMBER MONIZ: But in the meantime,
3 carrying on as usual?

4 MR. KOKAJKO: No, sir. We've issued
5 a bulletin to get information and try to have
6 them assess material. We will consider
7 further action as a result of the responses
8 and the task force report.

9 MEMBER MONIZ: Okay. I did not
10 understand that.

11 CHAIRMAN HAMILTON: I have Jonathan,
12 and then John.

13 Jonathan.

14 MEMBER LASH: I have a question at a
15 more rudimentary level going back to
16 Commissioner MacFarlane's last question.

17 Two parts. How densely was the
18 spent fuel racked in Fukushima compared to
19 what is the case in the US, and how important
20 is that in determining survivability in these
21 kinds of incidents?

22 MR. KOKAJKO: I will call on

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1 Jennifer for this.

2 MS. UHLE: At this point, it's not
3 altogether clear how densely packed the pools
4 were. So, unfortunately, my answer is
5 probably not going to satisfy you. We don't
6 know.

7 The density of the packing is
8 important in heat transfer. And it also is a
9 function of how long the fuel has been removed
10 from the core, because of course you're
11 decaying. You don't want to have, obviously,
12 all the hot fuel in one location.

13 We have done a great deal of
14 studies - great deal of study in this area and
15 have made licensees through requirements, re-
16 rack their pools to enhance the cooling to,
17 again, ameliorate any of the concerns
18 associated with a drain-down.

19 We do also have sprays that are
20 after the B.5.b requirements. If you've
21 heard, they are now codified in 10 CFR
22 50.54(hh). That was after 9/11.

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1 There is a requirement for
2 licenses to have sprays, and it's a portable.

3 So that if, for instance, there was a problem
4 with the sealing, there is a portable - the
5 ability to have a portable system brought in,
6 at least for injection. And then also the
7 thought would be that spargers would be
8 available for the sprays.

9 I don't know if that answers your
10 question completely, or not. We also have
11 requirements on hydrogen control internal to
12 the containment building.

13 And the concerns about the damage
14 to the spent fuel pools was - and the
15 explosions that occurred from the Units 1 and
16 3 - so, 1, 3 and 4 had damage - it's thought
17 at this stage to be hydrogen detonation.

18 Now, obviously, you don't have
19 hydrogen if you had a full spent fuel pool at
20 all times.

21 So, they are -- these units are
22 located next to each other. They do share

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1 some walls in some cases. There is a
2 question, again, this is just at this point
3 conjecture, whether there was some leaking of
4 hydrogen into certain areas. Or when they
5 were venting, if the venting system had leaks
6 that caused hydrogen to accumulate in areas
7 they didn't expect, potentially the Unit 4
8 Reactor Building, which encloses the spent
9 fuel pool.

10 So, all of this right now there's a
11 big question mark. Again, the location of the
12 hot assemblies with respect to the colder
13 assemblies is very important in the heat
14 removal in the situation where you're going to
15 be relying on air cooling.

16 MEMBER LASH: I have a follow-up,
17 but it may be to Commissioner Moniz rather
18 than to you.

19 Will you at some time, Ernie, talk
20 to us about the bearing of all of this on the
21 need for interim storage and what we saw in
22 Sweden where hot fuel is moved pretty quickly

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1 away from the reactor into a storage pool?

2 MEMBER MONIZ: I don't know.

3 (Laughter.)

4 CHAIRMAN HAMILTON: John.

5 MEMBER ROWE: This may be either to
6 you or to Jennifer. I don't wish to choose.
7 Stay handy, Jennifer.

8 Over the course of the last several
9 decades after TMI, after 9/11, after the
10 earlier series of Japanese earthquakes, the
11 NRC has taken a number of actions to
12 strengthen the ability of the existing nuclear
13 fleet to cope with events that weren't fully
14 anticipated in the original design bases, and
15 I wonder if you could just summarize some of
16 those actions for the Commission.

17 MR. KOKAJKO: You know, I will turn
18 this over to Jennifer as the Deputy Director
19 in the Office of Nuclear Regulatory Research,
20 since they were the lead for that.

21 MS. UHLE: Really, the NRC was
22 looking at what we call a whole spectrum of

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1 events, really, from all the time we've looked
2 at risk studies, probabilistic risk assessment
3 studies or PRA studies, is what I'll call it
4 from now on.

5 And those started with WASH-0740, I
6 think is the number. And then of course the
7 more famous WASH-1400 study was around 1978 or
8 so by Norm Rasmussen.

9 So, those risk studies look at the
10 whole - the whole envelope of possible
11 accident scenarios to the degree that we
12 postulate them and we know them.

13 Obviously in the model, there won't
14 be something that we haven't anticipated that,
15 or we feel is such a low probability like a
16 meteor crashing into a plant that we feel is
17 beyond the probability of -- realistic
18 probability.

19 So, after those events - I mean,
20 excuse me, after those studies, we recognized
21 the importance of some systems that are -
22 would be needed to mitigate an accident if

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1 that accident were very low probability and
2 those accidents were outside the design basis.

3 So we have, therefore, based on
4 risk information, focused our regulatory
5 attention on some systems that would not be of
6 importance during a design basis event.

7 And I would continue on with our
8 risk insights. We have required Station
9 Blackout rule which requires emergency diesels
10 in addition to the emergency diesels they
11 already have to be able to withstand station
12 blackout situations where you have loss of
13 offsite power and loss of all AC power from
14 the diesels.

15 We looked at the probability of
16 anticipated transient without scram, which is
17 a very low probability event. But we felt the
18 consequences could be potentially high, so we
19 have regulatory requirements for the ability
20 to withstand an ATWS event.

21 I would continue on to say after -
22 certainly after 9/11, there was obviously an

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1 event that we hadn't anticipated with aircraft
2 impact.

3 We looked at aircraft impact and
4 recognized it was prudent to develop
5 requirements to have the ability to bring in
6 portable equipment, just like the spent fuel
7 pool sprays, that could be there to mitigate
8 an extensive damage due to fires or
9 explosions.

10 So, the NRC isn't only focused on
11 design basis events. If people are familiar
12 with the regulatory vernacular, design basis
13 events are those that are required to be
14 analyzed. And they are spelled out in Chapter
15 15 of our Standard Review Plan.

16 But we do go beyond that and look
17 into risk insights to see if there's any
18 vulnerabilities.

19 The licensees were required, based
20 on Generic Letter 88-20, to look at the risk
21 profile of their plants. And they performed
22 independent plant examinations for both

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1 internal event and external events. So that's
2 where the external events were considered.

3 And after those were completed
4 after about - the external event work was
5 completed in the earlier '90s. It was
6 determined that there were no undue - that no
7 plants were causing undue risk to public
8 health and safety.

9 So we haven't just focused on the
10 standard design basis. We've looked at all -
11 a whole host of range of accidents.

12 We're continuing that work in our
13 State of the Art Reactor Consequence Analysis,
14 which will be, hopefully, going out for public
15 comment in the near future. That, as luck
16 would have it, looked at station blackout as
17 well as other scenarios that could lead to
18 release from plants.

19 It focused on a couple of plants
20 that volunteered to participate with us to
21 provide requisite data needed to do the
22 analyses.

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1 One is the Peach Bottom plant, and
2 that is a Mark 1 containment, which is exactly
3 what the Fukushima plants - or one of the
4 Fukushima plants - or several of the Fukushima
5 plants are.

6 And so, we have an analysis or
7 we're working on analysis of the probability
8 from those external events that would be
9 possible at those particular sites.

10 Now, when you talk about external
11 events, you have to be very site-specific,
12 very site-focused.

13 If you're sited like Cooper in
14 Nebraska, you're not going to have a tsunami
15 to worry about. It's just physically
16 impossible.

17 So, external events are very site
18 specific. And so, the State of the Art
19 Reactor Consequence Analysis has focused on
20 two plants; Peach Bottom and Surry, looked at
21 external events and has concluded certain
22 things about the transients and the ultimate

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1 release. And we'll be looking at going out
2 for public comment as soon as we can.

3 We are finding that our conclusions
4 from SOARCA that we have formed so far which
5 have showed that the sequences tend to take
6 much longer to evolve in the source term, that
7 could be released as much, much lower than
8 previous studies have shown.

9 CHAIRMAN HAMILTON: May I ask you -
10 we're about through here in time, but - excuse
11 me for interrupting, but I am impressed with
12 the testimony. It's very tentative and it's
13 very process-oriented, what you've told us.
14 And all of that is appropriate.

15 And certainly the tentativeness of
16 your judgements is appropriate, but here we
17 are two months after this accident occurred.

18 The American people are deeply
19 concerned about the safety of nuclear plant
20 operation in this country.

21 Has the NRC reached any firm
22 conclusions, clear conclusions two months

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1 after this accident that you convey to the
2 American people saying you're making these
3 plants safer?

4 MR. KOKAJKO: Sir, as I pointed out
5 in my conclusion, I think as the penultimate
6 slide, this is what Charlie Miller had stated
7 to our Nuclear Regulatory Commission
8 yesterday. At this time, we do not have any
9 information that would cause us to doubt the
10 safety of the current operating fleet.

11 We are taking all of this into
12 consideration and we do anticipate that we may
13 make changes to the regulatory framework, as
14 well as require plants to do additional
15 measures.

16 CHAIRMAN HAMILTON: But at this
17 point, you have nothing to say to the American
18 people about steps that are necessary to
19 improve the safety of nuclear plant operations
20 in the United States.

21 MR. KOKAJKO: Beyond what we've said
22 in the Information Notice, in the Bulletins

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1 and what inspection guidance we have given to
2 our onsite residents, we -

3 CHAIRMAN HAMILTON: What was that?
4 I mean, that doesn't mean anything to me at
5 all.

6 MR. KOKAJKO: Yes, sir, I
7 understand. It will take time to assess, and
8 it will take time to look at very complex
9 systems and understand their interactions with
10 one another.

11 CHAIRMAN HAMILTON: Well, I
12 understand the tentativeness of your position,
13 and I'm not the technical expert that we have
14 around this table, but it does seem to me
15 sixty days after this accident you ought to be
16 able to reach some very firm conclusions about
17 what, if anything, is necessary.

18 And if nothing is necessary, then
19 that's a very important conclusion.

20 MR. KOKAJKO: Yes, sir, I
21 understand. At this time, we've not
22 identified any issues that undermine our

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1 confidence in the current fleet.

2 CHAIRMAN HAMILTON: So you're saying
3 at this time that as a result of the Japanese
4 accident, there is nothing that needs to be
5 done in the American nuclear reactors across
6 this country.

7 Is that your position this morning?

8 MR. KOKAJKO: My position is that we
9 have asked the utilities to reevaluate their
10 emergency measures. We've asked them to --
11 our inspectors to inspect those activities to
12 date. We've asked our licensees for
13 additional information. And we are studying
14 the complexity of this event to understand
15 whether or not we should impose more
16 requirements, which I suspect -

17 CHAIRMAN HAMILTON: Okay.

18 MR. KOKAJKO: -- will, but it will
19 not be out until the task force does its
20 initial report in July.

21 CHAIRMAN HAMILTON: I see.

22 John.

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1 MEMBER ROWE: Mr. Chairman, I too
2 share the sense that the answer is even more
3 tentative than it needs to be. But as the
4 operator of 17 nuclear plants, I'd like to add
5 the worm's perspective on the bird.

6 (Laughter.)

7 MEMBER ROWE: It is one of the
8 reluctant geniuses of American nuclear
9 regulation that it has never said that the
10 search for enough is enough is over.

11 In the forty years that I have been
12 dealing with nuclear power regulation in this
13 nation, the NRC and even before it, the
14 sometimes maligned AEC, were always willing to
15 take into account new information to study and
16 to impose new requirements.

17 What I think has happened in the
18 sixty days, and like you, I would wish that it
19 were even more unequivocal, but what has
20 happened is the NRC has said through its
21 chairman, through its operating officers,
22 through its reports to Congress, that it

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1 continues to believe the American nuclear
2 fleet is safe, but it's slowly and patiently
3 looking for ways to make it even safer.

4 There is no doubt whatsoever that
5 one of the things that it will consider is
6 Commissioner MacFarlane's suggestion on
7 redistributing the spent fuel sooner.

8 I'm quite certain this also adds to
9 the argument for Commissioner Lash's point
10 that an interim storage facility would be a
11 better way to do that. It will also be
12 looking at a number of other things.

13 As the operator, I cannot tell you
14 today exactly how the NRC will prioritize such
15 new requirements as it may find necessary.
16 But one thing I know is that the NRC will
17 continue to try to evaluate and rank-order new
18 requirements.

19 Jennifer, and I apologize for not
20 remembering your last name, you know, listed
21 some of the things that have been done over
22 decades to impose requirements that go beyond

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1 the original design.

2 We utilities are always a little
3 troubled by that because, like an airplane, we
4 like a design to be affirmed once it's done.

5 But this industry in this country
6 has stayed safe in significant part, because
7 the NRC has been willing both to make
8 conclusions that it is safe, but also to
9 continue to seek new requirements where it
10 thinks it's appropriate.

11 And that is a process at least as
12 frustrating for the utility as it is for the
13 independent commission or the congressional
14 committee chairman, but it is a process that's
15 delivered a great deal of safety to the
16 American public.

17 CHAIRMAN HAMILTON: I am delighted
18 to hear your judgement about the NRC. I
19 really don't have a judgment about the NRC. I
20 have not dealt with them enough to know one
21 way or the other.

22 But I am interested in what your

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1 firm conclusions are as a result of the
2 Japanese accident and how it affects the
3 American people and the safety of these
4 plants. And I don't think you have forever to
5 answer that question.

6 MR. KOKAJKO: No, sir.

7 CHAIRMAN HAMILTON: I think it has
8 to be coming out of you fairly soon, as
9 quickly as you can.

10 Now, obviously these are very
11 complex matters. Far more complex, I'm sure,
12 than I appreciate.

13 On the other hand, I'm impatient, I
14 guess. And I think the American people are
15 impatient. And I think you folks have to
16 understand the result of the impact of an
17 incident like Japan on nuclear power in this
18 country.

19 But not just in this country.
20 Germany, as I understand, decided they're
21 going to back away from nuclear power
22 completely because of what happened in Japan,

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1 at least in part.

2 I don't think we're at that point
3 in the United States, for reasons John has
4 stated very well. But on the other hand, I
5 don't think it's a situation where you can
6 just ignore it.

7 I think the Nuclear Regulatory
8 Commission is under a spotlight and the
9 pressure is on you. The American people have
10 confidence in you, I hope and I trust.
11 They're expecting you to perform well.

12 MR. KOKAJKO: Thank you.

13 CHAIRMAN HAMILTON: I think - yes,
14 Al.

15 MEMBER CARNESALE: It's really just
16 to pick up on the timing question, I
17 understand that the first priorities have to
18 be about reactor safety. And that makes
19 sense.

20 It does sound, however, like you're
21 getting much of your information from the
22 Japanese government and, therefore, do not

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1 really have control over the pace at which
2 you're making progress.

3 This is particularly important to
4 us. We've been asked to make recommendations
5 about the back end of the fuel cycle, all
6 right? And we're going to hear today
7 tentative recommendations.

8 We all understand that we would
9 like, before we make final recommendations, to
10 know as much as we can that is germane that's
11 been learned from Fukushima.

12 And without more information on
13 what happened with the spent fuel and why,
14 whether in the pools or the dry casks, it is
15 extraordinarily difficult for us to say with
16 confidence the kinds of things that we would
17 have said with confidence two months ago.

18 And so, this concern about the
19 timing is not simply the concern about - or
20 not solely the concern about assuring the
21 safety of nuclear power in the United States,
22 but it also reflects upon the question the

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1 President has asked us about the back end of
2 the fuel cycle because a portion of the back
3 end of the fuel cycle is at Fukushima.

4 So do you have any sense of what
5 the timing might be - I understand it's not
6 entirely in your control -- of what the timing
7 might be as to when we might feel with some
8 confidence that we understand what went on
9 with the spent fuel at Fukushima both in pools
10 and in dry cask storage?

11 MR. KOKAJKO: The task force that is
12 currently considering this right now, I know
13 has outlined an extensive report that they're
14 trying to address and of which spent fuels are
15 a particularly large part of that, as well as
16 the reactors.

17 I wish I could give you more
18 clarity. They will brief the Commission on
19 July 19th. And the report will be out that
20 month. It will be made public.

21 And we will have probably the best
22 understanding then as to what recommendations

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1 for storage and spent fuel pools and dry cask
2 storage, for the power plant sites at that
3 time.

4 And I wish I could give you some
5 more certainty on that - more clarity on that.

6 CHAIRMAN HAMILTON: We'll conclude
7 this with Ernie. Did you want to say
8 something?

9 MEMBER MONIZ: Yes, I just wanted to
10 follow up really on the Chairman's earlier
11 questions.

12 First, on this question of
13 confidence in the Commission, etcetera, I just
14 note that, I mean, I had the pleasure of
15 testifying a few weeks ago and it was very
16 clear that there were signals coming out of -
17 this was in the Senate - that a different form
18 of review might very well be sought.

19 And I think that's where a crisper
20 approach in the NRC could help have a more
21 streamlined, shall we say, approach.

22 The absence of it, I think, will

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1 lead to multiplicity of reviews that may not
2 clarify the situation.

3 Secondly, the -- you made an
4 intriguing statement. You said that the pool,
5 the spent pool design at Fukushima is, roughly
6 speaking, you said it was made for refueling,
7 not for storage.

8 Doesn't that then suggest a certain
9 line of inquiry and conclusion on the
10 Commission's part?

11 MR. KOKAJKO: I can only speculate
12 what the Commission might do with information
13 like that.

14 As you well know, the pools --

15 MEMBER MONIZ: It's not information.
16 It was a statement of fact.

17 MR. KOKAJKO: Yes.

18 MEMBER MONIZ: In fact, a fact
19 that's been around for a long time.

20 MR. KOKAJKO: Yes, sir. The fuel
21 for many years built up, and they had to re-
22 rack, as I know you're aware. And the density

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1 in the pools became more and more, I
2 understand.

3 I think we'll have to deal and
4 assess that as part of this future study.

5 CHAIRMAN HAMILTON: Thank you very
6 much, Dr. Kokajko.

7 MEMBER MESERVE: That's not like --

8 CHAIRMAN HAMILTON: I'm sorry,
9 Richard.

10 MEMBER MESERVE: Allow me to come a
11 little bit to the defense of the NRC, if I
12 may, here.

13 CHAIRMAN HAMILTON: I'm not
14 attacking it. I'm just trying to get them to
15 do something.

16 (Laughter.)

17 MEMBER MESERVE: Well, it's not -
18 the problem I think we confront is that the
19 capacity to assemble the engineering
20 information to enable a thorough assessment
21 may not dovetail well with the political need
22 to be able to say things about what that

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1 assessment will yield.

2 We controlled the information at
3 Three Mile Island, and it was a couple years
4 until we got into the reactor and understood
5 the extent of the fuel damage, which was a
6 very important factor in understanding the
7 sequence of events.

8 So I think that there is a need to
9 do - to go as far as you can and as fast as
10 you can. But I think we all have to recognize
11 that a full evaluation of this accident may be
12 a year or two before we have all the
13 information that we need to actually have a
14 complete understanding.

15 CHAIRMAN HAMILTON: Richard, I was
16 not asking for a full and complete statement.

17 I just said it's sixty days, and I wanted to
18 know if any conclusions had been reached.
19 That's all I wanted to know. Any conclusions.

20 And the only conclusion I hear is
21 that so far as you know at this point, nothing
22 needs to be done with regard to the safety of

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1 American reactors as a result of what we've
2 learned from Japan. That's what I take from
3 your testimony today, and that's my concern.

4 You're absolutely right, of course,
5 about deliberation, and that I fully
6 appreciate the tentativeness of what you have
7 to say. You don't want to be too dogmatic
8 here.

9 MEMBER MONIZ: But may I also add
10 that -- I'm sorry, Mr. Chairman.

11 CHAIRMAN HAMILTON: That's okay.

12 MEMBER MONIZ: I would like to add
13 to go back to my question and Dick's point:
14 there are some decisions that can be addressed
15 without complete information about the
16 accident. Some not, but some there are.

17 CHAIRMAN HAMILTON: Per, you're
18 going to have the final word.

19 MEMBER PETERSON: I appreciate that.

20 (Laughter.)

21 MEMBER PETERSON: I do think it's
22 important to point out that the most important

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1 action that has already been taken with
2 respect to increasing safety based on lessons
3 learned from Japan, is to review the US
4 procedures for addressing this type of
5 accident from the perspective of hooking up
6 portable equipment and getting coolant
7 injection initiated and power connected in a
8 timely way.

9 Because the fact that that did not
10 happen in a timely way in Japan, contributed
11 greatly to increasing the severity of the
12 accident.

13 And that action has been taken.
14 And of all of the things that can reduce risk
15 for this type of external event, that's
16 probably the largest one.

17 And so I would say that there have
18 been actions taken which address major
19 elements of the risk based on these lessons.
20 So things have been happening that make a
21 difference.

22 Other questions such as whether or

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1 not the density of racking is an issue, that's
2 going to take a longer time to figure out
3 because there's very incomplete and
4 contradictory information about what has
5 actually happened to fuel that might have
6 uncovered.

7 But the most important near-term
8 actions, I think, have been taken already.

9 CHAIRMAN HAMILTON: Dr. Kokajko,
10 thank you very much for your presentation.
11 You and your colleagues, I know, have done a
12 lot of work for this.

13 We are deeply appreciative of that.

14 So we thank you. We also thank Jennifer for
15 her comments here today as well.

16 Now we go to Vicky Bailey who will
17 introduce the next speaker.

18 MEMBER BAILEY: Thank you.

19 MR. KOKAJKO: Thank you.

20 MEMBER BAILEY: Thank you, Mr.
21 Kokajko.

22 We would now like to hear from Mr.

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1 Glenn Podonsky. Is he here? Mr. Podonsky is
2 the US Department of Energy's Chief Health,
3 Safety, and Security Officer.

4 Mr. Podonsky's organization is
5 coordinating the Department's review of the
6 safety of DOE nuclear facilities in light of
7 the events at Fukushima Nuclear Power Station
8 in Japan.

9 So, this morning we will hear about
10 the ongoing safety review and any preliminary
11 results.

12 Mr. Podonsky, thank you for being
13 here today.

14 MR. PODONSKY: Thank you and good
15 morning.

16 It's my experience in Washington,
17 that most witnesses or presenters in front of
18 commissions or the Congress, start off with
19 "thank you for inviting me to speak." And I
20 will do that in a minute, but I want to tell
21 you why I really mean it.

22 In my almost three decades at the

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1 Department, I've actually worked with many
2 members of the Commission, directly or
3 indirectly with your staffs.

4 For example, Senator Domenici over
5 the years, had many issues with the Department
6 of Energy. And I worked with Clay Sell, Pete
7 Lyons.

8 General Scowcroft when he had his
9 staff of nuclear command and controls looking
10 at the security of the NMSA, I worked with
11 their staff.

12 Congressman Hamilton, when you and
13 Senator Baker conducted the security review of
14 the lost hard drives at Los Alamos, I worked
15 with your committee then.

16 Commissioner Ayers, in the last
17 five years I've been working with the Labor
18 Force on worker health and safety.

19 Commissioner Moniz, when he was
20 Under Secretary, I worked for him and with him
21 on many projects. Commissioner Bailey, when
22 you were Assistant Secretary, I worked with

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1 your staff.

2 And when I look at the backgrounds
3 of all the Commission serving, I harken back
4 to Senator Domenici's opening comment last
5 March at the first meeting that this will not
6 be a commission where the report sits on the
7 shelf.

8 While you do not need my
9 endorsement, I'm just saying I have firsthand
10 experience over three decades that I believe
11 that the members of this Commission will, in
12 fact, produce a report that won't sit on the
13 shelf.

14 And that is why this morning I
15 thank you for the opportunity to speak today
16 on the subject of nuclear safety at DOE sites
17 and what the DOE is doing in response to
18 nuclear accidents.

19 While I'm here representing the
20 Department as a whole, I actually serve as the
21 DOE's Chief Health, Safety, and Security
22 Officer.

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1 My organization is unique in the
2 entire Executive Branch as we are responsible
3 for independently assessing the performance of
4 the Department in terms of environment, safety
5 health, safeguard security, emergency
6 management, cyber security.

7 My organization is totally
8 independent from management responsibilities
9 for production or mission or site budgets.

10 This enables us to report
11 unbiasedly to the Secretary and to
12 congressional committees on how effective or
13 ineffective DOE is performing its function.

14 Nuclear safety is a priority at DOE
15 today and it has been, actually, for the last
16 15 years. DOE has implemented a cohesive,
17 integrated safety management program to
18 strengthen the Department's nuclear facilities
19 and operations.

20 In light of the recent events in
21 Japan, we're not resting on what we've already
22 done. We're actually currently reviewing our

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1 nuclear safety policies, our standards, our
2 practices to ensure a robust culture of safety
3 throughout all the aspects of the Department's
4 nuclear facilities and operations.

5 We've embarked on a new era of
6 proactive nuclear safety within the DOE. One
7 that even more than ever before embraces
8 fundamental importance in nuclear safety and
9 recognizes that DOE cannot succeed in its
10 mission without first protecting our workers,
11 the public and the environment.

12 Even before the events at
13 Fukushima, DOE under the leadership of
14 Secretary Chu and Deputy Secretary Poneman,
15 was enhancing the safety of our nuclear
16 facility and operations.

17 We have an integrated approach to
18 safety management, and particularly over the
19 past few years we have taken numerous steps to
20 strengthen oversight of the nuclear facilities
21 and ensure a culture of safety throughout the
22 complex.

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1 We have also adopted a graded
2 approach to safety with a higher risk
3 consequence to facilities and activities to
4 provide a higher degree of protection of
5 oversight than lower-consequence activities.

6 Most recently on February 8th,
7 2011, Deputy Secretary issued a revised
8 Nuclear Safety Policy applicable to all
9 departmental elements with a responsibility
10 for nuclear facility safety.

11 This covers expectations for the
12 design, construction, operation, and
13 decommissioning of our nuclear facilities in a
14 manner that would ensure adequate protection
15 of the workers, the public and the
16 environment.

17 The Department's nuclear enterprise
18 is vast. It's complex. We own or operate
19 nearly 200 nuclear facilities throughout the
20 United States, and these range from complex
21 facilities with multiple nuclear processes, to
22 inactive facilities or structures.

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1 The breadth of these activities
2 have demanded an integrated strategy that I've
3 just mentioned to identify development and
4 implement management and safety initiatives
5 appropriate to the given site.

6 In looking at DOE as a whole, it's
7 important to understand that DOE nuclear
8 facilities are very different - I want to
9 repeat that -- they're very different from
10 commercial nuclear reactors and face different
11 safety issues.

12 Of the nuclear facilities that I
13 just mentioned, nearly 200, only four are
14 nuclear reactors, and only two of those four
15 are what we call Category 1 nuclear
16 facilities.

17 Hazard Category 1 is a nuclear
18 facility in our vernacular that means that
19 they could conceivably cause a release
20 offsite.

21 In contrast, all commercial nuclear
22 power reactors in our vernacular would be

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1 considered Category 1 facilities.

2 Additionally, the reactors at DOE,
3 you should know, are a much lower power level
4 or residual heat level than are experienced in
5 the commercial nuclear industry.

6 The remaining 190-plus nuclear
7 facilities are what we call Hazard Category 2
8 or lower.

9 It's important to understand that
10 these facilities do not represent the same
11 potential hazard to the public.

12 Nevertheless, we thoroughly analyze
13 all of our DOE nuclear facilities to ensure we
14 understand and can mitigate potential actions
15 and hazards, such as fires, that could cause
16 release of radioactive materials, to mitigate
17 these events.

18 We put in high-quality safety
19 systems which are verified to be working
20 through rigorous testing and maintenance
21 programs.

22 The Secretary and the Deputy

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1 Secretary bear the ultimate responsibility for
2 nuclear safety at our department.

3 Line managers are responsible for
4 establishing, achieving and maintaining
5 stringent safety performance expectations and
6 requirements at these facilities.

7 We currently have three under
8 secretaries. They serve as what we call the
9 DOE Central Technical Authorities and are
10 responsible for ensuring effective
11 understanding and implementation of nuclear
12 safety requirements.

13 The Central Technical Authorities
14 are supported by the Department's Office of
15 the Chief Nuclear Safety and the NMSA Office
16 of Chief Nuclear Safety.

17 That may sound confusing, may sound
18 bureaucratic, but what it actually does is
19 creates offices that provide nuclear advice to
20 senior line managers. And they provide their
21 own oversight to ensure consistent execution
22 of field level nuclear safety

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1 responsibilities.

2 The DOE contractor management, they
3 are also responsible for rigorous
4 implementation of the safety expectations and
5 requirements set forth by the Department.

6 A crucial independent check of
7 these efforts comes from my office as being
8 responsible for policy development,
9 independent oversight, and regulatory
10 enforcement to ensure that every DOE nuclear
11 facility adheres to the highest levels of
12 nuclear safety.

13 Recently, we have elevated the
14 Office of Nuclear Safety to be a separate
15 office reporting directly to me.

16 Completing this internal safety and
17 oversight is the Defense Nuclear Facility
18 Safety Board, the DNFSB.

19 That is an independent agency
20 established by Congress in 1988, to provide
21 recommendations to the Secretary regarding
22 establishing and operating in accordance with

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1 highest nuclear standards.

2 The Board reviews the content and
3 implementation of standards relating to
4 design, construction, operation and
5 decommissioning of the Department's defense
6 nuclear facilities.

7 Through improvements from our
8 ongoing interface with the DNFSB, I can tell
9 you that the Department has materially
10 improved the safety of our defense nuclear
11 facilities over the last 23 years.

12 Now, since 2008 in response to a
13 very critical GAO report about the Department,
14 and the title was "Department of Energy Needs
15 to Strengthen Its Independent Oversight of
16 Nuclear Facilities," DOE undertook a number of
17 actions that started with the previous
18 administration and has continued with the
19 current administration.

20 These actions include the
21 following: We have created and implemented a
22 site-lead approach to prioritize key oversight

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1 activities for each site; we've conducted
2 targeted inspections and continuously monitor
3 site performance; we revised inspection
4 selection practices to prioritize oversight of
5 safety bases and higher hazard nuclear
6 facilities; we've created a tracking system
7 for monitoring and evaluating the safety
8 status of higher nuclear facilities; we added
9 more nuclear engineers to both my independent
10 oversight group, as well as the nuclear safety
11 offices; we've improved the National Training
12 Center's training programs by incorporating 23
13 safety bases courses into the curriculum; we
14 have prioritized enforcement practices to
15 devote more attention to the most serious
16 events; we've increased the DOE program
17 management engagement in enforcement
18 proceedings to enable prompt action and
19 ownership by what we call the line; we've
20 increased the transparency of all that we are
21 doing by making inspection reports publicly
22 available on our web; and we have created a

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1 new dedicated web page to share DOE nuclear
2 safety information.

3 We have a good safety record for
4 nuclear. It's instilled a degree of rigor in
5 our nuclear facility operations through the
6 issuance of regulations, development of safety
7 bases, enhanced line oversight, training and
8 qualification programs, and enhanced conduct
9 of operations.

10 While the Department has already
11 done a lot to advance nuclear safety, we will
12 not be complacent.

13 In particular, the accident in
14 Japan stands as a global reminder for the need
15 of continuing vigilance and the commitment to
16 nuclear safety that cannot be ignored.

17 These events highlight the
18 importance of a robust safety culture and
19 compel DOE to ensure the primacy of safety
20 throughout our complex.

21 The Deepwater Horizon spill which
22 occurred last year at this time, also teaches

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1 us about the importance of a positive safety
2 culture and how a series of things can go
3 wrong in any complex system.

4 We're also taking other actions to
5 strengthen our nuclear safety program. I just
6 talked about what we're doing for nuclear
7 safety oversight. Let me now talk about what
8 we're doing for the nuclear safety program
9 itself.

10 Generally along the lines of
11 mission performance accountability, strategy,
12 oversight, training, and infrastructure, just
13 some of these are we're reassessing our
14 nuclear safety metrics to ensure that they
15 clearly track safety performance, critically
16 assessing of their performance, monitoring
17 trends and sharing best practices.

18 The newly-appointed Assistant
19 Deputy Secretary, Admiral Mel Williams, just
20 established a Nuclear Safety and Security
21 Council.

22 This council is a group of nuclear

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1 experts who will assist in the performance of
2 metrics trends and lessons learned. And this
3 was just created last week.

4 We have an issuance of revised
5 guidance associated with what we call
6 integrated safety management, and oversight of
7 high-hazard nuclear facilities that will
8 provide additional information on approaches
9 for managing safety at our nuclear facilities.

10 We've increased our effectiveness
11 of oversight activities by focusing the
12 independent oversight on more on the nuclear
13 operations as the GAO appropriately pointed
14 out in 2008.

15 We've established a training
16 program to provide a continuum of training
17 throughout nuclear safety professional's
18 career.

19 This is an area, I must say, that
20 has been elusive to the Department all the way
21 back to Secretary Watkins when he wanted to
22 have a training program, he wanted to combine

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1 training efforts. We never did.

2 We are doing that now. We have
3 reached an agreement. This is bureaucratic,
4 but it helps you understand. We reached an
5 agreement to bring all these disparate groups
6 together under one group at our National
7 Training Center.

8 And the individual that is going to
9 run that for the Department is coming out of
10 the Albuquerque Service Center. And again,
11 for everybody here, that doesn't mean a lot,
12 but it's a high-level position. And people
13 are coming together to finally do what we
14 haven't been able to do for close to twenty
15 years.

16 We're also seeing staffing gaps and
17 hiring needs on technical personnel to assure
18 that they are properly trained, qualified, and
19 certified to perform nuclear safety duties.

20 Now, in response to Fukushima, we
21 have taken a number of actions specifically in
22 regards to what happened.

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1 Within 12 days of the event,
2 Secretary Chu, who is the first secretary to
3 ever issue a Safety Bulletin; that normally
4 comes out of my position, but he wanted to
5 make sure that the DOE elements understood its
6 importance. And the Safety Bulletin that I
7 believe you all have seen, requires all DOE
8 higher hazard nuclear facilities to step back
9 and perform a self-critical review of their
10 safety analysis.

11 While DOE continuously analyzes the
12 safety of all of our facilities, it's devoted
13 its significant resources to upgrading the
14 facilities to meet seismic protection
15 standards. We want to reexamine these areas
16 in light of what we're hearing about Japan.

17 As discussed in my advance
18 technical paper that I provided the
19 Commission, we have begun to receive the
20 responses. We actually have the responses for
21 the two Category 1 facilities. And the
22 responses for the Category 2 facilities,

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1 coincidentally, are due today.

2 At this time, we do have results
3 for the highest category of facilities. Of
4 particular note, the site contractors had re-
5 verified that all the safety systems and
6 controls are functioning as intended and are
7 operable. But being part of DOE, we just
8 don't trust the contractors to tell us so.

9 The line management at the site has
10 reviewed the results, and they report them to
11 be accurate and reliable, but now the
12 headquarters, my organization, together with
13 the other nuclear functions, are looking at
14 what was done.

15 So, yes, we have checkers checking
16 the checkers, but you need to do that with
17 something as important as this.

18 Our review of the hazard category
19 facilities will be starting today as they come
20 in. And we believe that taking the additional
21 step of systematically evaluating the hazard
22 at Cat 2 facilities is a prudent one.

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1 We understand that the public and
2 our stakeholders will and should expect that
3 DOE should do everything it can to prevent any
4 nuclear incident.

5 The review of nuclear facilities is
6 not a paper exercise. DOE line management,
7 together with my office as the DOE safety
8 organization, we're carefully reviewing the
9 results. And we're serious about taking
10 actions as exemplified by the Secretary's
11 personal involvement.

12 DOE will be looking at the results
13 from two perspectives. We will look
14 individually at the results for each site to
15 determine what makes sense at that site.

16 We will also look collectively at
17 the results to determine if we need to make
18 more global changes, such as changes to
19 requirements or guidance.

20 We will review vulnerabilities
21 related to beyond design basis events in
22 response to what we are learning from the

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1 Japanese situation.

2 Now, there's something else I want
3 to come forward with and tell you that the
4 Deputy Secretary is hosting a nuclear safety
5 workshop on June 6th to the 7th here in
6 Washington. Actually, Crystal City.

7 And this is to address nuclear
8 safety issues related to the accident in Japan
9 specifically and to gather information from
10 other agencies such as NRC, INPO, DNFSB, and
11 from various experts, such as experts in
12 seismic events.

13 We have senior government level
14 officials at all levels participating from
15 NRC, from Defense Board, from FEMA, from EPA.

16 Our expectation is that it's an
17 important workshop that will be able to have
18 tangible recommendations that DOE will look at
19 to see if there's any further actions we need
20 to take.

21 I'd like to invite the Commission
22 to attend, participate in whatever capacity

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1 while it's closed to the public and the press
2 because we want to make sure that we can have
3 total candor discussion about the nuclear
4 situation and make sure we understand what
5 we're doing.

6 And since we have so many of the
7 top-level nuclear experts as well in
8 government, we think that would be a very
9 interesting and very dynamic activity for
10 everybody who's interested in the nuclear
11 business.

12 Next steps, the Safety Bulletin and
13 workshop are only the first ones, not the
14 last.

15 We're committed to follow the
16 events from the Japanese accident, and we will
17 evaluate the responses to the Safety Bulletin.

18 As we learn more, we may well identify
19 additional actions that would further reduce
20 risk or improve our ability to respond to
21 severe natural disasters.

22 I will be traveling to Japan in two

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1 weeks - three weeks to meet with the Japanese
2 officials to learn more ourselves. And also
3 to meet with a program that we have, which is
4 the Radiation Effects Research Foundation,
5 which studies the effects of radiation from
6 Nagasaki and Hiroshima. And I will be meeting
7 with that panel of governors as well.

8 Now, I would like to say that my
9 NRC colleagues had a lifeline. I'd like to
10 have DOE call a friend, and I would like to
11 start right off and invite the new Director of
12 the Office of Nuclear Safety, Dr. Jim O'Brien,
13 to join me so that we can be responsive in a
14 timely way to any of your questions.

15 MEMBER BAILEY: Thank you, Glenn.
16 And we'll have your friend come up alongside
17 of you.

18 Can you say his name again? I want
19 to make sure I -

20 MR. PODONSKY: Dr. Jim O'Brien.

21 MEMBER BAILEY: O'Brien.

22 MR. PODONSKY: He is the Director of

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1 the newly-created Office of Nuclear Safety.

2 MEMBER BAILEY: Okay. All right.
3 Questions from commissioners? Per and Mark,
4 and Allison.

5 MEMBER PETERSON: Thank you.

6 In the questions that you received
7 and were asked to answer, they focused on
8 safety of DOE nuclear facilities.

9 I'd like to expand a little bit to
10 ask you a couple of questions related to DOE
11 activities to support NRC, and in particular
12 the Japanese, in responding to the accident.

13 One thing that strikes me, having
14 seen the photos from the Unit 3 spent fuel
15 pool that is filled with debris, is that it
16 looks a lot like actually the K Basin pool
17 that was successfully cleaned up.

18 So, in fact, there's precedent for
19 having gone back and mitigating these sorts of
20 things. And that knowledge and expertise
21 resides in the DOE.

22 So, maybe could you discuss a few

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1 of the things, perhaps, that DOE has been
2 doing to help others with respect to the
3 consequences of this accident?

4 MR. PODONSKY: Sure. I'll start,
5 and I'll ask my friend to continue.

6 Immediately DOE stood up a nuclear
7 command control center from Under Secretary
8 Tom D'Agostino to be responsive to anything
9 that they might need for emergency operations.

10 And Admiral Krol dispatched radiological
11 teams to monitor the area.

12 Additionally, Assistant Secretary
13 for Nuclear Energy, Pete Lyons, has been in
14 constant contact with the NRC.

15 And I want to harken back to this
16 workshop that we're putting together. This is
17 just not a normal DOE or government workshop.

18 This is a workshop that we are looking for a
19 sharing of specific lessons learned that we
20 have from our experiences in our own
21 facilities like Rocky Flats, Mound, Fernald,
22 and our experiences at Savannah River still in

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1 the early stages.

2 Because as you may have realized,
3 NRC, I'm sure, is getting a lot of assistance
4 from INPO and others.

5 Jim, anything to add?

6 DR. O'BRIEN: Just this, and I know
7 everybody knows this already that, you know,
8 the United States as well as other
9 international communities are working together
10 to help the Japanese in their recovery. And
11 we'll certainly continue to do that in any
12 manner that we can.

13 And I know Secretary Chu is
14 dedicated to do that and had put together and
15 still has, I think, a group of five senior
16 scientist leaders with the Department of
17 Energy that have been working with him and the
18 Japanese officials to see where we can help
19 out.

20 MEMBER PETERSON: Thank you.

21 MEMBER BAILEY: Mark.

22 MEMBER AYERS: Thank you.

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1 You know, I want to start out by
2 saying, and I've said this more than one
3 occasion, that although the DOE takes some
4 hits once in a while from a lot of people, I
5 want to say again that DOE is the best friend
6 that construction workers have, that
7 maintenance workers have, and operations and
8 security workers have.

9 We have the confidence that when
10 our workers go to work in the morning, they're
11 going to return to their family in the same
12 shape they went to work. And a lot of that is
13 due to the good work of your offices. So, I
14 want to thank you.

15 Back when we met in September, I
16 asked for a review to determine how safe
17 workers are in the US nuclear industry. And I
18 suggested if workers are well protected, it is
19 more likely that the public will be well
20 protected as well.

21 Now, in light of the events in
22 Japan, this has become pretty much a central

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1 issue. And it would appear that at least at
2 the Fukushima nuclear power plant, the
3 emergency response workers have been placed at
4 very significant risk.

5 I look forward to hearing more
6 about that today. But in response to my
7 request, the staff contracted with StoneTurn
8 Consultants for a study of occupational safety
9 and health throughout the fuel cycle, and to
10 examine past history since Three Mile Island,
11 the current state of safety and future risk.

12 They produced a pretty remarkable
13 study in terms of its scope, and, I would say,
14 depth, especially in light of the short time
15 available to complete it.

16 The report is full of data, and I
17 encourage all of you, all of my fellow
18 commissioners to take a look at it, but they
19 found that safety in the nuclear industry is
20 very good.

21 Radiation safety in the nuclear
22 industry has improved greatly since Three Mile

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1 Island.

2 The occupational safety and health
3 risk in nuclear power plants are eighty to
4 ninety percent lower compared to fossil plants
5 and hydro plants even though nuclear plants
6 run at a capacity of over ninety percent
7 compared to 65 percent in fossil plants, and
8 forty percent in hydro plants.

9 However, they also found that there
10 have been numerous near disasters in nuclear
11 plants over the years, and they characterize
12 the risk underlying these events in very
13 different ways than I have heard discussed
14 here.

15 According to this report, the main
16 risk in this industry - the main risk in this
17 industry are inexperience with the operations
18 of complex technologies or external risk, and,
19 therefore, failure to effectively address
20 operational failures that arise from such
21 circumstances.

22 Also, overconfidence in

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1 technologies and in probabilistic risk
2 assessment - too often a good risk assessment
3 is interpreted as something being fail-safe
4 when it's not -- complacency or negligence
5 particularly in terms of performing
6 operational monitoring and maintenance,
7 intentional risk-taking to cut corners or
8 cost.

9 So, as you can see, the risks
10 described here are not so much about
11 earthquakes or tsunamis or terrorism or the
12 like. They are about the people who work in
13 the industry and how well they operate it,
14 which is why investigators took a look at the
15 safety culture and how oversight is performed.

16 They provide many favorable
17 findings, but they also find many areas where
18 there is room for improvement, including
19 stronger labor-management collaboration, which
20 I know the Department is very supporting.

21 They make many other findings that
22 in the interest of time that I won't go into

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1 now, but importantly they do not see
2 unmanageable risk in the back end of the once-
3 through nuclear fuel cycle.

4 Finally, they note that all the
5 sources of electricity generation pose very
6 high risk. They are just to judge this issue
7 according to the relative risk of each of
8 these sources and how well these risks are
9 managed.

10 Nuclear power may be high
11 technology, but its development and operation
12 are still very clearly human endeavors. And
13 the human factor has to be an important part
14 of our deliberations.

15 There are very many good thoughts
16 in this report that I hope that we will
17 consider very carefully. And it was a very
18 worthwhile report.

19 I don't know if you've seen it, but
20 I think you'll find it very interesting. It's
21 posted on the BRC website.

22 So, again, I want to thank you and

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1 I want to make it clear that the report
2 clearly shows that the nuclear industry is the
3 safest industry in my industry, in which we
4 lose - four workers die every single day they
5 go to work in this country. Thank you.

6 MR. PODONSKY: May I comment on
7 Commissioner Ayers?

8 Worker health and safety is a
9 priority of the Department of Energy. It's
10 not just cheap talk.

11 When my office was created five
12 years ago, it was pulling all the worker
13 health and safety programs together, the
14 security programs, the environmental. And
15 what we've done for sustainability, is to make
16 sure that we also reached out, as you all
17 know, to all the national labor unions.

18 And it first started under the
19 Republican administration. It's continued
20 under the Democratic administration. And the
21 importance of that is communication on a
22 quarterly basis with all the major unions.

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1 So, we get feedback directly as the
2 independent safety office, to find out what
3 the issues are at the worker level, not to
4 take away the lion's responsibility, to make
5 sure that the workers feel a sense that people
6 really are watching over what the contractors
7 are doing. Because we agree, and Secretary
8 Chu has in one of his major principles, is
9 that our human resources are our most valuable
10 asset. And we take that to heart.

11 We can't get our mission done if we
12 don't have the people to do it and if they
13 don't feel that they have the sense that the
14 Department will take of them.

15 And while this is not part of this
16 commission, one of the things that we are also
17 responsible is taking care of the former
18 worker program, those Cold War warriors who
19 were responsible for the nuclear weapons
20 program in the '40s and '50s. And we make
21 sure that they get their medical screenings.
22 We make sure that they get their benefits the

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1 best as they can with the Labor Department.

2 And the reason I mention that is
3 because it's the whole picture that you have
4 to understand.

5 And if the workers are going to
6 feel safe in not only the nuclear, but also
7 just the industrial safety side of the house,
8 they have to feel that they have safety
9 culture that management believes in and
10 follows.

11 MEMBER BAILEY: Thank you,
12 Commissioner Ayers.

13 Commissioner MacFarlane.

14 MEMBER MacFARLANE: Thank you
15 Commissioner Bailey.

16 Okay. A couple technical
17 questions. So, the two Hazard Category 1
18 locations that you've identified, the Advanced
19 Test Reactor and the High-Flux Isotope
20 Reactor, only one of them has a spent fuel
21 pool; is that correct?

22 DR. O'BRIEN: No, they both have

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1 them.

2 MEMBER MacFARLANE: They both have
3 spent fuel pools, and are the - is the spent
4 fuel in the pools in a dense-packed
5 arrangement?

6 DR. O'BRIEN: I don't know the
7 answer to that question.

8 MEMBER MacFARLANE: Okay.

9 DR. O'BRIEN: They're totally
10 different type of fuel. So, I don't - we
11 don't - as far as I am aware, we don't
12 differentiate between the dense-packed and
13 normally packed because we don't have that
14 issue that we are dealing with.

15 MEMBER MacFARLANE: Okay.

16 DR. O'BRIEN: Like I said, it's a
17 total different type of fuel. A lot smaller.

18 MEMBER MacFARLANE: Right. Right.
19 Yes, okay. It's metal fuel.

20 DR. O'BRIEN: That is aluminum.

21 MEMBER MacFARLANE: Yes, okay.

22 DR. O'BRIEN: Aluminum clad.

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1 MEMBER MacFARLANE: Right, aluminum
2 clad.

3 MR. PODONSKY: Since we didn't
4 answer the question, does that mean I need to
5 phone another friend?

6 MEMBER MacFARLANE: Well, I'm just
7 curious as to the situation in those pools now
8 that you brought them up.

9 MEMBER MONIZ: We can get you a
10 follow-up answer.

11 MEMBER MacFARLANE: Yes, a follow-up
12 answer would be - you don't have to find out
13 right away, but, you know, it would be
14 interesting to know and put it on the record.

15 And then the other question I have
16 is that, okay, so, you've got these three
17 categories of hazard facilities.

18 The thought that occurs to me is,
19 well, you have a couple of facilities sitting
20 on a riverside in Hanford in particular where
21 you have these very large containers of liquid
22 high-level waste.

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1 And were either facility to
2 experience perhaps a large seismic event where
3 those containers were severely disrupted, you
4 would lose all of that material. And it would
5 get into the groundwater which would go
6 offsite, but those facilities are not listed
7 as Category 1. Why?

8 DR. O'BRIEN: The main pathway of
9 concern that we have is the airborne, which
10 would cause the more immediate impact to the
11 public and require the emergency - quick or
12 emergency response.

13 So, that is the reason that these
14 are at that different category of level as far
15 as -

16 MEMBER MacFARLANE: So, water-borne
17 transport is not as much of a concern.

18 DR. O'BRIEN: It is a concern. And
19 the tanks are, you know, larger sites in areas
20 where the release is not expected from those
21 design basis events to get there.

22 And we are looking at the beyond

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1 design basis events to see exactly what is our
2 vulnerabilities and what we need to do to
3 reduce those vulnerabilities.

4 MEMBER MacFARLANE: And will that be
5 part of the studies that you're doing now in
6 response to the Fukushima accident?

7 DR. O'BRIEN: Yes, it will be.

8 MEMBER BAILEY: Thank you,
9 Commissioner MacFarlane.

10 Commissioner Moniz.

11 MEMBER MONIZ: I have a number of
12 questions. Maybe I'll have to divide it up
13 into sessions, but one is to follow on
14 Allison's comment just now.

15 I am a little bit surprised about
16 the Category 1 not including the waste tanks.

17 And I mean for airborne release.

18 First of all, I remember when we
19 were working together, the charms of dealing
20 with hydrogen burping of tanks. I do invoke
21 actual data -- arguably the biggest offsite
22 release in Russia may have been Mayak, a waste

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1 tank. There's the issues of a bomb in a waste
2 tank.

3 So, I just - I really don't
4 understand how this is not a Category 1. And
5 if you have any comment on that, great.

6 And similarly I would - now, it
7 depends upon whether it's obviously DOE or
8 NRC, etcetera. But fundamentally in this
9 context, I'd be curious about your reaction to
10 the possibility that a large aqueous
11 reprocessing plant would not be in that same
12 category.

13 Any comments on that, then I'll
14 come back to a second question.

15 MR. PODONSKY: Well, in both areas,
16 Commissioner Moniz, I think clearly they are
17 good questions. And I'm hoping that our
18 review will ask ourselves why are we doing and
19 not categorizing the tanks, because we do know
20 how volatile those have been over many, many
21 years.

22 And one of the things that I've

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1 challenged our Nuclear Safety Group, is to
2 literally think out of the box.

3 We've gotten - when I said in my
4 opening statement that we are far different
5 than the commercial reactor world, that
6 doesn't mean that we don't have safety issues
7 that we need to really consider and
8 reevaluate.

9 I'm looking for the out-of-the-box
10 thinking at the workshop, and I'm also looking
11 at this newly-created council that the Admiral
12 set up to talk about these issues because
13 clearly the line functions are the ones who
14 help determine.

15 But as a safety organization, we
16 need to also challenge the line functions.
17 So, my answer is those are good questions and
18 I don't have a cogent answer as to why. And I
19 don't think - I don't know whether Jim does or
20 not.

21 DR. O'BRIEN: I can just add one
22 thing.

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1 The requirements that are related
2 to both Haz Category 1 and 2 are, in essence,
3 the same as far as your analysis and the
4 control sets that you derive from them.

5 So, the protection provided for the
6 facilities whether they're designated Haz
7 Category 1 or Haz Category 2 are, in essence,
8 the same.

9 MEMBER MONIZ: The messaging is very
10 different, however.

11 DR. O'BRIEN: That is correct.

12 MEMBER MONIZ: And I don't believe -
13 well, I would suggest you look at it.

14 MR. PODONSKY: We fully understand
15 and agree.

16 MEMBER MONIZ: Fine. May I ask a
17 second question, Madam Chair?

18 And here, Glenn, for purposes of
19 your self-protection, I'd invite an answer of
20 yes, no or no comment.

21 (Laughter.)

22 MEMBER MONIZ: You mentioned DNFSB

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1 and I put that in a broader context for our
2 concerns here. I mean, congress seems to have
3 a particular affection for DOE in wanting to
4 be very helpful with special oversight bodies
5 on top of the generic ones like GAO. So, it's
6 DNFSB, it's TRB, etcetera.

7 Do you find this helpful to have
8 these additional layers?

9 (Laughter.)

10 MR. PODONSKY: We -

11 MEMBER MONIZ: Yes, no, or no
12 comment?

13 (Laughter.)

14 MR. PODONSKY: When Chairman Dingell
15 asked me to give him just a yes or no, I had
16 to say in a hearing, Mr. Chairman, and I say,
17 Mr. Commissioner, I have to give you a little
18 broader answer because the yes or no will get
19 me into trouble.

20 And the truth of the matter is as a
21 career civil servant for over 36 years, I have
22 learned that it's not wise not to take help if

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1 it's offered in the spirit of truly helping.

2 And the Defense Board, I will tell
3 you, over the last 23 years that I've been
4 working with them, actually does help the
5 Department, and has done so in the past.
6 Congressional hearings actually help at times
7 as well. This commission is helping the
8 Department take a look.

9 So, I think it's a resounding yes,
10 but it has to go as qualified.

11 MEMBER MONIZ: And finally the -
12 thank you for that informative and
13 illuminating answer.

14 (Laughter.)

15 MEMBER MONIZ: My understanding is
16 that the Secretary kind of assembled for
17 Fukushima, an inside/outside kind of technical
18 SWAT team similar to the Gulf of Mexico thing.

19 And I'd just be curious if you
20 could say a little bit more about that and
21 what its implications are for addressing then
22 safety issues.

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1 MR. PODONSKY: He has formed a loose
2 group of folks from the National Laboratories,
3 from DOE headquarters, Bob Budnitz from
4 Berkeley, Steve Aoki and others you may recall
5 from your previous incarnation and external as
6 well.

7 And as you might expect from
8 Secretary Chu being the inquisitive nuclear
9 scientist or scientist that he is, he wants
10 people to just think out of the box.

11 And he's invited our nuclear safety
12 community to also work with them so that we
13 can see what they're developing and see what
14 might be applicable to the Department of
15 Energy.

16 So, it truly is, as he would say,
17 almost like a Bell Labs gathering of different
18 expertise to think about what are we not
19 thinking about.

20 For example, the infusion of -

21 MEMBER MONIZ: Specific outputs.

22 Specific results of -

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1 MR. PODONSKY: As of right now, I do
2 not know if there are going to be any specific
3 outputs, but I do know that they are advising
4 our Nuclear Safety Council. We've been
5 invited to participate.

6 I started to give you a pseudo
7 example that I actually got from Secretary Chu
8 himself early on, and that was the infusion of
9 saltwater.

10 That went in not as a criticism,
11 but an observation. What was going to happen
12 to the mechanisms afterwards? Was everything
13 going to work? Was there going to be
14 corrosion? You know, who's thinking about
15 that?

16 So, like he did with the Deepwater
17 Horizon event, he brought in folks to advise
18 and think not in the moment, but think longer
19 term.

20 And so, that's what he's doing
21 here, which is - and they are advising, I
22 believe, both the NRC and the Japanese.

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1 MEMBER BAILEY: Thank you,
2 Commissioner Moniz. And thank you, Glenn, for
3 that very artful answer to that question.

4 Commissioner Eisenhower, you have
5 the last line of questioning.

6 MEMBER EISENHOWER: Thank you very
7 much for this very informative presentation.

8 You indicated, of course, that the
9 Department is instructed by the Secretary to
10 undergo a self-critical review. And you have
11 rightly emphasized the importance of human
12 resources at the Department of Energy
13 especially around these critical issues.

14 I was wondering if you could tell
15 us a little bit about the training process.
16 We've heard a lot about the analysis of safety
17 events, but what kind of training are you
18 putting people through at this particular
19 stage, and will your training activities vary
20 at all based on the events in Japan?

21 MR. PODONSKY: Specifically, when we
22 hire the people that we hire for the

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1 Department, we hire them for their already
2 training and experience that they have in both
3 the private sector, as well as other
4 operations coming from the NRC.

5 What we started, and you may have
6 heard me say that we're standing up a new
7 training process, and we're just - just
8 yesterday the individual that accepted the job
9 was in agreement.

10 So, we're just in the middle of
11 starting that up and identifying what needs to
12 be done.

13 Where the Department is deficient,
14 and has been for a number of years, is having
15 - instead of counting option, and Commissioner
16 Ayers knows this, is that we have a lot of
17 training programs out at the sites for the
18 workers, for subcontractors, but they're not
19 all under one umbrella to make sure that
20 they're standardized.

21 So, one of the things that we're
22 doing is making sure that we have standardized

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1 training, that we make sure that we understand
2 where we're deficient.

3 We know the capabilities that we
4 currently have on board with our technical and
5 nuclear safety experts, but what we're trying
6 to do is make sure that we continue them being
7 at the cutting edge.

8 We hope that what we gain in
9 knowledge from the Japanese experience, will
10 advise that effort as we build this.

11 And remember, as I said, again, not
12 being bureaucratic, but this is the first time
13 that this agency has ever had an attempt to
14 co-exist all the training efforts in one
15 location more like a training czar. And it's
16 my position that this entity should not report
17 to me, but should report to the head of human
18 capital.

19 I'm not about mergers and
20 acquisitions. So, it's not about the typical
21 build up your own organization. This is
22 something that we want to do corporately.

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1 I realize this is a rather
2 expansive answer, but we're right at the early
3 stages of what more do we need to do that we
4 haven't already done.

5 MEMBER BAILEY: All right. I saw
6 Commissioner Moniz' hand go up.

7 MEMBER MONIZ: Thank you for your
8 kindness, Madam Chair.

9 I have one more question. And it
10 goes a little bit outside of your remit,
11 clearly, but it does have safety implications.

12 And this also may be a case, however, where a
13 response from the Department later on might be
14 merited, and it involves the question of
15 commingling defense and civilian waste.

16 It strikes me at this stage, as
17 there being at least two reasons to reverse
18 the mingling decision.

19 One is that I think by the
20 Department's own statements, we're probably a
21 minimum of twenty years away from a civilian
22 repository.

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1 Since that decision was made, there
2 have been agreements with states which would
3 provide another 1998 moment when there is no
4 way to meet an agreement and so moving
5 defense waste out and perhaps, therefore,
6 developing a separate repository which would
7 have safety implications would seem to make
8 sense.

9 Secondly, in terms of reaching a
10 civilian repository, there is an argument
11 that, okay, we did WIPP. Our next easiest,
12 meaningful step would in fact be a high-level
13 waste defense repository older and colder,
14 smaller amounts.

15 No argument about whether it's an
16 energy resource or a waste. It's a waste,
17 etcetera. And that could provide valuable
18 experience in a timely way than for subsequent
19 civilian repositories.

20 Any position or comment on that?

21 MR. PODONSKY: I'm going to go back
22 to your earlier question and say, yes, I would

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1 like to take that back to the Department and
2 come back to the Commission with an answer
3 because that will involve multiple program
4 offices.

5 And while I have an opinion, I
6 think the Department needs to give you a more
7 cogent answer as to what it's currently doing
8 between EM, Science and NMSA.

9 MEMBER MONIZ: And following the
10 Chairman's impatience, will that be an answer
11 soon?

12 MR. PODONSKY: Yes.

13 (Laughter.)

14 MEMBER BAILEY: All right. Thank
15 you, Commissioner Moniz.

16 Mr. Podonsky, and your friend, Dr.
17 Jim O'Brien, thank you very, very much.

18 MR. PODONSKY: Thank you.

19 MEMBER BAILEY: We will be taking a
20 ten-minute recess coming back at 11:15.

21 (Whereupon, the above-entitled
22 matter went off the record at 11:02 a.m. and

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1 resumed at 11:15 a.m.)

2 CHAIRMAN HAMILTON: May I ask the
3 commissioners to return to their seats,
4 please?

5 MR. FRAZIER: Yes, if we could get
6 everybody to take a seat, we will get started.

7 Commissioners, please be seated. The rest of
8 you sit down. Thank you, Sue. Jack and Betty
9 in the back, sit down. Okay.

10 Congressman Hamilton, sir.

11 CHAIRMAN HAMILTON: Okay. Thank you
12 very much, Tim.

13 We've heard a lot about the
14 accident at Fukushima and what steps are being
15 taken by our government to try to learn from
16 that. We've appreciated the testimony that we
17 have had.

18 General Scowcroft and I would like
19 to assign to the Transportation and Storage
20 Subcommittee to take the lead for the
21 Commission in following the situation in
22 Japan, and making recommendations later this

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1 year regarding those matters that fall within
2 the scope of the Commissions review.

3 I presume, Dick and Phil, you're
4 prepared to take that responsibility. Thank
5 you very much.

6 (Laughter.)

7 CHAIRMAN HAMILTON: Your eagerness
8 impresses the Chairman a great deal.

9 (Laughter.)

10 CHAIRMAN HAMILTON: In just a moment
11 we will turn to the presentations by the co-
12 chairmen of these subcommittees who will brief
13 us on the recommendations that are emerging
14 thus far from their work.

15 And we'll ask the co-chairmen of
16 these three committees over the period of the
17 next few hours to speak from their seats so we
18 can promote the discussion.

19 Before we do that, I want to
20 express my thanks and the thanks of General
21 Scowcroft for the staff report on what we've
22 heard.

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1 The staff prepared and issued that
2 report at the direction of the Commission so
3 that we could be confident that we understood
4 the major concerns of our different
5 stakeholders and the public before we issued
6 our draft report to the Secretary of Energy at
7 the end of July.

8 We've had a lot of feedback to that
9 report. We're deeply appreciative of those
10 who have responded. We found their comments
11 helpful and useful to us, and I think they
12 will strengthen the work of the Commission.

13 Now, as we move into the
14 subcommittee reports, I want to say that the
15 subcommittee co-chairs and the members of the
16 subcommittees have really done remarkable work
17 thus far investigating the challenging issues
18 that each of them confronted.

19 The co-chairs of the three
20 committees have done outstanding work in
21 bringing the subcommittees together. And the
22 subcommittees appear to be working together

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1 very nicely. That's a testament to the
2 leadership of the subcommittee co-chairs.

3 I believe we are moving towards an
4 agreement of a meaningful set of
5 recommendations for the full commission to
6 consider in a few weeks. So, I express my
7 thanks to the subcommittee chairmen and the
8 members of the committees.

9 We've asked the subcommittee co-
10 chairs to brief us today on the
11 recommendations that their subcommittees will
12 offer for consideration by the full
13 commission.

14 Following today's discussion, we'll
15 ask that the subcommittees adjust their
16 recommendations as they see fit, and prepare
17 their draft subcommittee reports for release
18 by the end of this month.

19 Today's presentations and the draft
20 reports of the subcommittees will be posted on
21 our website for public review and comment.

22 We will use the subcommittee

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1 reports and the comments we receive as the
2 basis for the draft report of the full
3 commission, which is due to the Secretary of
4 Energy at the end of July.

5 I want to remind everyone that the
6 recommendations emerging from the
7 subcommittees may or may not be adopted by the
8 full commission.

9 In any event, the work of the
10 subcommittees will help inform, but not
11 substitute, for the report of the full
12 commission.

13 After today's discussion, we will
14 integrate the work of the subcommittees and
15 the views expressed here today into a coherent
16 and actionable draft report for public release
17 at the end of July.

18 We will announce our plans and
19 schedule for receiving comment on the draft
20 report of the full commission shortly after we
21 release the report.

22 Depending on the feedback we

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1 receive, we may decide to hold meetings of the
2 full commission or of subcommittees to further
3 investigate a particular issue.

4 We will ask our subcommittees to
5 finalize their reports later this year, and we
6 will issue our final report by January 2012,
7 the deadline established by the Secretary.

8 The public can chart these and
9 other developments through our website which
10 has recently undergone a series of
11 improvements intended to better communicate to
12 all who are interested. The site may be found
13 at www.brc.gov.

14 With that, we'll ask Commissioners
15 Meserve and Sharp to review the
16 recommendations that are emerging from the
17 work of the Transportation and Storage
18 Subcommittee.

19 Richard, you're going to begin?

20 MEMBER MESERVE: Yes. Thank you,
21 Mr. Chairman.

22 As you've indicated, Phil Sharp and

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1 I were the co-chairs of this effort. And
2 we're going to be - we plan to share the stage
3 here this morning.

4 I'll start us off, and then we'll
5 pass the baton to Phil. And of course I'll
6 allow him to answer all the questions.

7 (Laughter.)

8 MEMBER MESERVE: My intention this
9 morning is to basically explain how we've gone
10 through our work. And let me emphasize at the
11 outset, that these are the draft
12 recommendations.

13 We anticipate that they will be
14 illuminated by consideration among the full
15 commission and by the public comments we hear
16 today.

17 So, our function here today is to
18 solicit comment in what clearly should be seen
19 as drafts, and ones that could be evolved as
20 we go forward.

21 This is just a quick reminder of
22 all those who have served on this

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1 subcommittee. This has been a hard-working
2 group that we very much appreciate all of the
3 input that they provided to us.

4 And I think that after Phil and I
5 are finished, we invite the other members of
6 the subcommittee to augment our comments as
7 they deem appropriate.

8 The central question that we have
9 tried to address is whether the United States
10 should change its approach to storing and
11 transporting spent nuclear fuel and high-level
12 waste while one or more permanent disposal
13 facilities are established.

14 In a certain sense, we've been
15 doing this basically accidentally or maybe
16 without conscious decision, for over fifty
17 years.

18 There have not been places to move
19 the material, and we've been doing both
20 storage and transportation over this time.
21 And I guess the question that we've been
22 addressing is whether this sort of accidental

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1 strategy is one that ought to be augmented and
2 enhanced in particular with regard to the
3 possibility of interim consolidated storage.

4 In order to complete our work, we
5 have had a variety of meetings. We went to
6 Wiscasset, Maine. You may wonder - some of
7 the audience may wonder why, but it is the
8 location of the former Maine Yankee power
9 plant where the complete reactor has been
10 decommissioned. And all that's left there is
11 a facility for the dry cask storage of the
12 fuel.

13 We had two meetings here in
14 Washington at which we heard extensive
15 testimony as we had, as well, in Wiscasset.

16 We had a meeting in Chicago.
17 Chicago was a very logical location for us to
18 discuss and focus on transportation because it
19 is a transportation hub. And we had a
20 deliberative session in January.

21 We did have the benefit of other
22 meetings. Obviously the various Commission

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1 meetings were not ones where storage and
2 transportation escape notice.

3 And we had the benefit of a
4 classified briefing for those members of the
5 Committee that have had clearances to deal in
6 particular with the security issues that are
7 associated with transportation and storage.

8 So, our input has included
9 information from dozens of witnesses, a lot of
10 comments that have been submitted. There are
11 Commission papers that have come to the group.

12 And let me say for the benefit of
13 the audience if you're not aware of it, and as
14 the Chairman indicated, there is a website
15 that has all of this material that is on it.

16 So, all of the input that we have
17 received other than the classified input, is
18 available for public review.

19 I'm going to spend a fair amount of
20 time on our draft recommendation which really
21 I think is the central recommendation that
22 comes out of our group, which is that the

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1 United States should proceed expeditiously to
2 establish one or more consolidated interim
3 storage facilities as part of an integrated,
4 comprehensive plan for managing the back end
5 of the fuel cycle.

6 There are a variety of reasons I
7 think that support this draft recommendation.

8 First, creating this kind of a storage
9 capability preserves options. It enhances the
10 flexibility to be able to adapt to
11 circumstances and to respond to other aspects
12 of an integrated waste management system.

13 As we'll be discussing later today
14 in connection with some of our other reports,
15 there will be consideration of whether we
16 ultimately should view the spent fuel as a
17 waste or as a resource, whether we perhaps
18 should recycle it.

19 While that is being determined,
20 storage helps to preserve the option of going
21 in either direction depending on what we
22 learn.

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1 We have demonstrated that we can
2 store this material safely and securely so
3 that preserving that option doesn't present
4 untoward risks.

5 And as it happens, storing the fuel
6 makes the ultimate disposal decision somewhat
7 easier in that the fuel is cooling. And so,
8 it reduces the siting challenge for disposal
9 facility or provides the opportunity to
10 increase the capacity of a given disposal
11 site.

12 The second factor that I think that
13 supports this recommendation is that
14 consolidated storage allows the removal of
15 fuel from decommissioned sites.

16 I mentioned that we had gone to
17 Wiscasset and we heard testimony from the
18 local citizenry there. In a certain sense, it
19 felt that a breach of an understanding they
20 had had when it was an operating reactor had
21 been achieved.

22 There's nothing there but fuel.

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1 They've lost the tax benefits of jobs that
2 came with the facility. It was not part of
3 the bargain.

4 There are nine such sites for -
5 just decommissioned fuel sites in existence
6 today where similarly the benefits to the
7 communities have been substantially reduced.

8 Removal allow those communities to
9 make beneficial use of that land. And as it
10 happens, there are efficiencies that arise in
11 moving the fuel to a consolidated interim
12 site. And that after you stop being able to
13 piggyback on the security capacity that exists
14 at the nuclear power plant, then there are
15 very large costs associated with just the
16 security that now has to be carried by just
17 the spent fuel facility.

18 So, there are some efficiencies
19 that could be achieved by centralizing the
20 material. And in fact it may well turn out -
21 and we have some studies that are on our
22 website to show this - that in fact you can

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1 save money by building a site at which
2 material could be consolidated because of the
3 reduced aggregate cost for chiefly security.

4 The third factor that supports this
5 recommendation is that consolidated storage
6 would enable DOE to start to meet its
7 obligation with regard to spent fuel.

8 The standard contract that DOE has
9 with all of the generating companies, has a
10 term in it that required the DOE to start
11 removing fuel in 1998. This was actually a
12 provision that was inserted in that contract
13 as a requirement from the Nuclear Waste Policy
14 Act of 1982.

15 The liability for that as estimated
16 by the Justice Department because they've not
17 been fulfilling the contracts -- so there's
18 been an impartial breach of the contracts and
19 DOE has been forced to pay damages as a
20 result.

21 The liability for that is estimated
22 to be about \$13 billion by 2020. And it has

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1 been estimated that that will increase for -
2 by 500 million per year if -- for every year
3 of delay thereafter in having someplace to
4 move this material.

5 So, there are - there is an issue
6 here of just the cost issue associated with
7 that, but there's also an issue here about the
8 failure of the government to fulfill its
9 contract and the breach of trust with the
10 public that has resulted from that.

11 Fourth, let me say that this
12 particular recommendation may offer some
13 benefits as we learn more from Fukushima.

14 Obviously, as you heard this
15 morning, we're examining issues associated
16 with spent fuel disposition after the
17 Fukushima event. There's a lot of evaluation
18 that's been going on.

19 As I understand the NRC position,
20 is that they are confident that things are
21 safe as they are now, but perhaps they could
22 be improved, and that there is a need to

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1 consider whether some possible requirements
2 might come out of that.

3 Among them might be moving
4 materials of course from the spent fuel pools
5 into cask storage, which could be onsite or
6 offsite.

7 But beyond that, a consolidated
8 storage facility enables you to move material
9 away from the reactor site into areas that
10 might be less vulnerable to extreme events.

11 Reactors need a heat sink. And,
12 therefore, are near oceans or lakes or rivers,
13 for example, and that is not necessary for dry
14 cask storage.

15 So, there are -- conceivably out of
16 Fukushima, there could be some benefits from
17 the pursuit of this recommendation.

18 Fifth, we think that a storage
19 facility could be a very helpful adjunct in
20 connection with a disposal facility.

21 And let me emphasize something I
22 should have said at the outset is that we're

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1 making this recommendation not with any idea
2 that there shouldn't be a full pedal-to-the-
3 metal effort to site a disposal facility.
4 That this is something that should be done
5 anyway, and it's in conjunction with this that
6 we think there are opportunities to be able to
7 have a disposal facility - excuse me - a
8 storage facility.

9 Among the things that you could do
10 if you had a storage facility is you'd have
11 basically some buffer capacity to be able to
12 move spent fuel from sites on a very
13 predictable schedule without having to stuff
14 it someplace into a repository immediately.
15 Have the capacity, perhaps, enhance the smooth
16 functioning of the disposal facility by having
17 an intermediary facility that could take the
18 material and hold it for the period that is
19 necessary.

20 And of course if there were delay
21 in the installation of a disposal facility, a
22 storage facility would serve the benefits that

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1 I had mentioned earlier.

2 And sixth, and the final support
3 for this recommendation, is that I think there
4 are some technical opportunities that arise
5 from it.

6 There's an enhanced capability for
7 long-term monitoring and testing that could
8 arise that may be necessary.

9 The consolidated facility unlike
10 some of the decommissioned sites, could have a
11 pool so in the event that one needed to open a
12 canister to evaluate the material.

13 There's lots of - there'd be some
14 advantages for the monitoring and research
15 associated with spent fuel that could sensibly
16 be done in a facility that had not only just
17 storage, but the associated research
18 facilities that are associated with
19 understanding the phenomena effect behavior of
20 spent fuel over a period of extended storage.

21 So, this is really our principal
22 recommendation that comes out of this report.

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1 And we don't seem to be able to get to our
2 further recommendation.

3 (Laughter.)

4 MEMBER MESERVE: You've heard enough
5 already, I gather. Oh, there we go.

6 The subcommittee has concluded
7 there do not appear to be unmanageable safety
8 or security risks associated with the current
9 methods of storage at existing sites, but
10 rigorous efforts will be needed to ensure this
11 continues to be the case.

12 Lots of information on this issue
13 was submitted to the Committee initially
14 before Fukushima. A lot of information was
15 submitted on hardened storage. More recently
16 in Fukushima, there have been concerns about
17 issues associated with storage. And
18 particularly with spent fuel pools.

19 And these need to be taken
20 seriously. They need to be evaluated
21 carefully. And as I understood this morning,
22 Phil is going to take care of that over the

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1 next several months on behalf of this
2 committee.

3 But in any event, this - there is -
4 although we're not aware at the moment of any
5 unmanageable safety and security risks
6 associated with storage, they could well arise
7 and a very careful evaluation of them is
8 necessary.

9 And let me say that over the longer
10 term, and this bears on the last sentence,
11 that there is research on degradation
12 phenomena with spent fuel that really does
13 need to be seriously examined.

14 The database on that is thin. We
15 have information on the behavior of spent
16 fuel. It has lower burn-up than is typical in
17 reactors today and has been in storage for
18 shorter periods of time than we now
19 contemplate may well be necessary.

20 And so, it's not to say that this
21 is anything that's going to move quickly or
22 that now we anticipate will be a huge problem.

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1 But evaluating it is necessary, and taking
2 action as necessary is going to be
3 appropriate.

4 The third recommendation is that
5 spent fuel currently being stored at the
6 decommissioned sites should be first in line
7 for transfer to a consolidated interim storage
8 facility as soon as such a facility is
9 available.

10 Let me just mention there may be
11 safety reasons to get material out of spent
12 fuel pools. Safety should be the highest
13 priority. That can be done in dry cask
14 storage that's on a site, or it could be done
15 at a consolidated site.

16 But we say for moving materials
17 from existing reactor sites to the
18 consolidated site, it should go - the material
19 that should move first is the materials at
20 these decommissioned reactor sites.

21 These are the sites that as I
22 mentioned earlier, have been waiting for this

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1 material to be moved. They have land that
2 could be put to better use.

3 It's expensive to store this
4 material at the decommissioned sites because
5 we can't piggyback on the security that exists
6 at an operating reactor.

7 And there's even potential for
8 reduced cost by getting these as a result of
9 moving this material to a centralized
10 facility.

11 So, there's lots of reasons why we
12 think that the decommissioned reactor sites
13 should be first in line for the movement of
14 the fuel so that those sites can be brought to
15 greenfield status at an early-as-possible
16 moment.

17 So, let me pass the baton to Phil
18 and give him an opportunity to adjust,
19 correct, or modify any of my comments.

20 MEMBER SHARP: I certainly have no
21 modification. And as anyone who knows us
22 individually, knows the superior experience

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1 and brain power rests with my colleague. So,
2 I would never want to get into a debate with
3 him.

4 However, I might just quickly
5 reinforce something. First of all, I don't
6 think there's any doubt among the subcommittee
7 members that this is a very important and
8 central recommendation and nobody should
9 misunderstand the intensity with which we
10 approach this as an important step to be
11 taken.

12 I would simply add to what Dick has
13 said, that this is already envisioned under
14 current law of the Nuclear Waste Policy Act.

15 This proposal of consolidated
16 interim storage is not at all new. It has
17 been studied extensively for decades in this
18 country, and multiple organizations and
19 commissions have recommended that this should
20 be a part of an integrated strategy for the
21 United States.

22 So, this is not something that was

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1 suddenly coming up with in this commission as
2 such. And it has gone under different names.

3 And so, that leads to confusion sometimes in
4 the debate about this.

5 Let me turn quickly to the last
6 three or four recommendations that we have.
7 This recommendation gets at the point of
8 having a new organization manage our strategy
9 and the implementation of the strategy for
10 nuclear waste disposal.

11 Now, let me quickly say that our
12 subcommittee did not do the work on this, and
13 indeed you're going to hear about it - so, I'm
14 going to say very little about it -- from the
15 Disposal Subcommittee which had - that did
16 extensive work on this. And Jonathan Lash,
17 and I don't know if the senator is going to be
18 here or not, will be raising that at one
19 o'clock.

20 So, I'm going to have very little
21 to say about it here, other than to say we
22 anticipate that it should have -- the new

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1 entity to manage the integrated strategy,
2 should have responsibility for storage and
3 transportation, as well as for the permanent
4 disposal site kind of proposition.

5 However, a work in progress still
6 in our subcommittee is what do we do between
7 now and the time that we hope to get in place
8 such a new entity. And I think a number of us
9 strongly feel we should not wait.

10 It could take three to five years
11 depending on the speed with which an
12 administration and a congress decide to act on
13 the proposals or are able to get agreement on
14 proposals. And it will probably take at least
15 a year to stand up any new organization once
16 it is put into law.

17 So, given the incredible work and
18 study that has gone on in this, numbers of
19 inquiries from communities around the country
20 for different reasons on nuclear facilities,
21 there is no reason to say "wait until this is
22 in place."

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1 And we're trying to work out how to
2 more specifically identify that, but certainly
3 the Department of Energy under current law and
4 under current facilities, can engage in
5 putting together all kinds - bringing together
6 all kinds of important information and
7 advancing the capacity for the siting of such
8 one or more facilities.

9 Secondly, we want to be aware that
10 indeed we want to do nothing to inhibit any
11 communities around the country. And when the
12 Department of Energy went out looking for
13 volunteer sites for another purpose over the
14 last three years, they actually found a number
15 of communities that stepped forward.

16 And so, we would not want to do
17 anything to inhibit communities that thought
18 they might have an interest in this facility
19 from being able to step forward and begin.

20 But, again, let me suggest to you
21 this is a work in progress as to how we might
22 specifically go about this.

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1 Let me turn to - I think to the
2 fifth - did I push the right -

3 (Off-record comments.)

4 MEMBER SHARP: Here, we turn to the
5 - simply an expression of again making use of
6 the incredible work done by the Disposal
7 Subcommittee. So, I'm not going to go through
8 it because you are going to get that yet this
9 afternoon.

10 But essentially what we're saying
11 is that the siting principles and the process
12 used for siting a consolidated interim
13 facility probably should be designed very much
14 like what you would use for the ultimate
15 disposal site.

16 However, we want to be very clear
17 we do not see these as similar facilities.
18 They have quite different requirements, and
19 they have quite different technical
20 requirements that you might have in place.
21 And so, it is not a matter of having uniform
22 requirements.

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1 When you're going for thousands of
2 years of disposal, that is quite different
3 than when you're looking at a century or more
4 proposition as what we call here as interim,
5 means interim. This will not become the
6 permanent disposal site for nuclear waste.

7 Nobody believes that any design
8 that has been discussed is adequate to that
9 task. And so, that is quite - to be kept
10 quite separate.

11 The sixth recommendation has to do
12 with our transportation recommendation. And
13 here, in a sense, what we have done is made a
14 major finding that we have in place and we
15 have experience that would suggest that we
16 have a very good record of how to go about
17 transporting spent nuclear fuel and other
18 nuclear materials.

19 And, indeed, the record is very
20 extensive. Again, this has been studied and
21 we have a lot of experience going all the way
22 back to 1957 where we had over 800 shipments

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1 by the nuclear Navy of spent nuclear fuel.

2 We've had thousands of shipments in
3 the last decade of transuranic waste into the
4 WIPP facility in New Mexico.

5 And we've had thousands and
6 thousands of other kinds of transportation go
7 on over many decades here and abroad, and the
8 safety record is exceptional.

9 However, recognizing that record is
10 not sufficient for where we need to get. And,
11 indeed, it's very important.

12 I would simply say here and what's
13 in the report will be important, the
14 extensiveness with which we try to cover this,
15 is that we have learned from this experience a
16 lot of important principles, including the
17 need for extensive planning, including the
18 need for considerable regulatory oversight by
19 actually multiple state and federal regulatory
20 entities.

21 Where we have training in place not
22 only for the drivers of the trucks, but for

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1 local responders through which - the
2 communities for which this may go.

3 We have in place monitoring systems
4 in transit. And we have multiple ways of
5 testing not only the casks that are going to
6 store, but other parts of this.

7 And so, this leads to the
8 recommendation that as you begin to site an
9 interim storage facility, once it's in place,
10 it will actually step up the volume of what is
11 in transit we assume of nuclear spent fuel.

12 And that planning should start very
13 early because it's going to take time; one,
14 because of the extensive coordination that is
15 needed, but; two, because of the
16 communications and the education and the
17 interaction not only with government
18 officials, but with communities.

19 Because we recognize this is one of
20 the most politically sensitive issues for
21 in many parts of the country where people
22 understandably do not have experience with

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1 nuclear waste, the casks or any of these
2 oversight activities that we have in place.

3 And so, they naturally raise
4 questions, and they should be raising
5 questions. And so, one must allow that time.

6 And so, we strongly recommend that
7 you start this planning process early on and
8 includes things like providing financial
9 assistance to the local folks whose
10 cooperation and training to make this safe is
11 needed.

12 Let me turn to Seven. And this
13 goes to the question of financing the interim
14 facility.

15 Here again we're relying for heavy-
16 duty work on the Disposal Subcommittee, which
17 has looked at this broader issue of the
18 financing mechanisms that we have in place.

19 Our central point here is simply
20 that that - the Nuclear Waste Fund should
21 cover the interim storage facility. And
22 indeed it's important to recognize this is

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1 already anticipated in the current law.

2 So, this is not a brand new
3 concept. It is a matter of making use of a
4 facility you have.

5 I'd like to take this moment just
6 to articulate two major fundamentals of
7 American nuclear waste policy that we are
8 simply assuming go forward throughout this
9 commission.

10 The first is that the users and the
11 beneficiaries of nuclear power, they are
12 paying now, paying as we go for the cleanup
13 costs that we anticipate, the storage and, by
14 the way, the cleanup at the nuclear reactor
15 site.

16 The reactor as not a part of our
17 discussion, have to have these decommissioning
18 funds to set aside. But to pay for the
19 nuclear waste disposal, we have in place the
20 Nuclear Waste Fee. And that of course has
21 been building up in the US Treasury.

22 And, by the way, remains the legal

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1 obligation of the American government in my
2 view, and I think most people's view, to be
3 utilized solely for the purpose of covering
4 these expenses.

5 In other words, we are not putting
6 the financial burden of nuclear waste disposal
7 on future generations. We are - we took that
8 on as an obligation starting in the 1980s.

9 The second half of that policy was
10 the federal government would be the entity
11 responsible for the disposal of the nuclear
12 waste. And of course we've had lots of delay
13 in that and we're not meeting that obligation
14 yet as was anticipated under the contracts and
15 the law. And that is costing federal
16 taxpayers money. And part of the reason for
17 getting on with interim storage is to address
18 that.

19 But, excuse me, I sort of went
20 beyond Recommendation 7. Thank you, Mr.
21 Chairman.

22 (Off-record comments.)

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1 CHAIRMAN HAMILTON: Okay. Following
2 Dick's recommendation, let me ask first if
3 members of the subcommittee have a comment.

4 And I think Al does have - he's a
5 member of the subcommittee, yes.

6 MEMBER CARNESALE: I had a question
7 which I think will be illuminating.

8 We distinguished we have two
9 subcommittees. One recommended a consolidated
10 interim storage facility, and we also have one
11 on disposal.

12 I think most people have a
13 reasonable idea of what we mean by disposal.
14 We mean permanent, we mean forever, or at
15 least we mean no intention of ever moving it
16 again.

17 Interim, people have very different
18 ideas of what interim means. We sometimes
19 hear numbers like five years before it goes
20 off to reprocessing, or we hear a hundred
21 years depending upon when the disposal
22 facility is available.

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1 I wonder if you could do anything
2 to elucidate what is meant by "interim" in
3 this context.

4 MEMBER MESERVE: I'd be happy to.

5 As you well understand, the
6 original concept was that the fuel would
7 remove from the reactors and relatively
8 promptly would be removed and go elsewhere,
9 perhaps to reprocessing, and that obviously
10 has not happened.

11 The - we're talking about storage.
12 We're talking about something more on the
13 order of a century than is conceivable than
14 the five years.

15 The NRC has been examining this
16 matter and has a so-called Waste Confidence
17 Rule. Just that's the sort of order of
18 magnitude.

19 Of course, there are other options
20 that may arise. It may move sooner, but we
21 ought to contemplate that there might be some
22 of the fuel that would be stored for those

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1 sorts of durations.

2 MEMBER SHARP: I might add one of
3 the theories here is Dick outlined the
4 flexibility to the broad system that having it
5 gets. The facility itself has a great deal of
6 flexibility.

7 Our presumption is it may be you
8 begin with one size which may be expanded and
9 shrunk as you begin to shift this system.

10 It is likely to have the
11 characteristic of being simply store in dry
12 cask. It may also have a pool. It may also
13 be a facility where if we discover twenty
14 years from now, that in fact the dry casks are
15 starting to deteriorate.

16 We do not expect that, but we could
17 all then repackage if we had to. But
18 "interim" does mean it's not permanent. And
19 it means that - so, it may be a facility that
20 reaches a peak and then shrinks back and then
21 disappears, but one should not - a community
22 should not assume it's thirty years.

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1 CHAIRMAN HAMILTON: Two questions
2 for you.

3 One of the phrases that jumped out
4 at me was "one or more" in your first
5 recommendation.

6 What is your thought about that?
7 Do we need to be thinking of two, three, four,
8 five of these things, or do you seriously
9 think only one is necessary, or have you given
10 that -

11 MEMBER SHARP: Physically for what
12 you have to do, one would certainly do the
13 trick in terms of volume.

14 But in terms of transportation and
15 where things are located, one could easily
16 argue it might be wiser to have several
17 regionally located.

18 But, frankly, I think the siting
19 difficulty will govern that as much as
20 anything.

21 CHAIRMAN HAMILTON: The other
22 question I had related to these litigation

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1 costs. I don't know an awful lot about this,
2 but it's very frustrating, I think, to the
3 American taxpayer to see that they have to
4 continually pay litigation costs here.

5 And I think you mentioned 500 - you
6 anticipate 500 million a year or something
7 like that.

8 MEMBER MESERVE: After 2020, yes.

9 CHAIRMAN HAMILTON: After 2020.
10 What can we recommend, what can we do about
11 that to cut out these litigations costs?

12 MEMBER MESERVE: Well, it turns out
13 that these matters have been extensively
14 litigated already. That most of the legal
15 issues, I think, have been resolved.
16 Although, lawyers always can be clever to find
17 new issues, but the guidelines that should
18 govern these matters are largely resolved.

19 There is going to be a continuing
20 liability on the government and these until
21 it's able to rectify its breach, but there are
22 certainly ways to do this much more

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1 efficiently than we are than the traditional
2 scorched-earth sort of litigation in the
3 courts.

4 We do have this and it wasn't one
5 that has rose to the level of a
6 recommendation, but I would anticipate that we
7 would strongly urge the creation of either
8 settlements that would resolve these matters,
9 or failing that some kind of an arbitration
10 mechanism which would be a lot more efficient
11 and avoid the costs that have to be incurred
12 by both sides on resolving matters where the
13 legal issues are now extraordinarily narrow,
14 if not fully resolved.

15 CHAIRMAN HAMILTON: Okay. I've got
16 three commissioners. Per, Ernie and Allison.

17 Per.

18 MEMBER PETERSON: Thank you, Mr.
19 Chairman.

20 I think one of the important points
21 that needs to be emphasized is that the
22 standard contracts between DOE and utilities

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1 do create constraints. And you can't abrogate
2 those constraints without being subject to
3 potential penalties. In fact, that's why
4 there's this large amount of money that's
5 being transferred from taxpayers to rate
6 payers right now to pay for onsite storage.

7 There are three important types of
8 constraints that the contracts generate. The
9 first is that the contracts do limit the
10 purposes for which the Nuclear Waste Fund fees
11 can be used. And this is important, for
12 example, for reactor fuel cycle technology
13 RD&D, it's quite clear that these monies
14 cannot be used for that purpose.

15 And we need to work within the
16 limitations of these legal agreements in terms
17 of how these monies can be used and how
18 they're restricted.

19 The next important element is that
20 the contracts do require full cost recovery.
21 That is as long as the DOE and federal
22 government perform, all costs associated with

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1 these activities are supposed to be recovered
2 through prospective increases in collections.

3 And, therefore, utilities should be
4 interested in this system working at least
5 somewhat efficiently in comparison
6 particularly to what the performance has been
7 up to date.

8 The final part is that the courts
9 have determined that in order to meet the
10 obligations in the contract, spent fuel has to
11 be delivered at a rate that the DOE thought
12 they could achieve back in 1987. And it's a
13 huge rate. It's 2700 metric tons per year.

14 So, my question for the
15 subcommittee is, it may not actually make
16 sense to try to achieve that rate. And, in
17 fact, once you've moved fuel from shut down
18 reactors, in many cases the more logical thing
19 to do with the system could be to use onsite
20 storage at operating reactors for perhaps a
21 fairly large fraction as opposed to moving it
22 to consolidated.

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1 But it would seem to me that
2 utilities will be penalized. They still pay
3 the same fee, yet then they have these costs
4 to do the onsite.

5 How do we get around this problem
6 that there's a perverse disincentive not to
7 send your material to consolidated storage
8 even once it's available?

9 MEMBER SHARP: Well, let me suggest,
10 I don't have the exact answer. We've had
11 discussions at other subcommittees about this,
12 and so - but I'm just going to give you a
13 partial possibility here.

14 And that is you have to remember
15 that going forward if we can get a clear
16 policy in place, there are going to be real
17 opportunities to renegotiate these things.
18 You just mentioned the possibility that DOE
19 can raise to pay cover cost the fee.

20 Well, it might be that the utility
21 finds it in its interest to renegotiate as
22 opposed to another high-cost fee that goes on

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1 to some system that has ordered to pay them to
2 keep it thin.

3 I'm not saying that's a good idea.

4 I'm just simply saying that do not think
5 contracts are forever and more permanent than
6 this nuclear waste is.

7 The fact is that that is subject to
8 negotiation, but obviously the federal
9 government, to abrogate the contract, would
10 have to pay penalty to do it.

11 But it may find that that's worth
12 doing, by the way.

13 MEMBER PETERSON: Very good answer.

14 MEMBER MESERVE: Let me supplement
15 that with, just to come back to one of your
16 points about the purposes that under the
17 existing litigation because storage was not a
18 part of the system, these various judgments
19 that are being issued against the government
20 for its failure to comply with the obligations
21 of the standard contract, are being paid by
22 the taxpayers. It's from the judgment fund.

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1 One of the implications of this
2 recommendation would be is if we actually
3 start to fold storage mechanism in as part of
4 the overall scheme that leads to the ultimate
5 disposition on the material, then, and as Phil
6 indicated, part of the statute actually
7 contemplates when you use storage in that way,
8 then these recoveries would be borne by the
9 people who benefitted from the power. Namely,
10 they get - the support would come from the
11 fund and rather than from taxpayers.

12 So, there are some fairness issues
13 that are associated with this. And we have
14 had conversations as part of our subcommittee
15 deliberations with the nuclear industry. And
16 they have indicated that they very much favor
17 getting these issues resolved.

18 And the fact that some of these
19 costs would be transferred to the Waste Fund
20 from the judgment fund would actually, from
21 their point of view, be certainly a fair trade
22 for having these issues resolved in a fashion

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1 that gets these issues associated with the
2 back end of the fuel cycle off the table.

3 MEMBER PETERSON: Thank you. And I
4 do think it's important just as a matter of
5 policy. And it is in the Nuclear Waste Policy
6 Act, that these costs are internalized into
7 the rates that electricity payers pay.

8 So, the waste costs are
9 internalized, which actually is in stark
10 contrast to fossil fuels where massive costs
11 are external to -

12 CHAIRMAN HAMILTON: Ernie, and then
13 Allison.

14 MEMBER MONIZ: Thank you, Mr.
15 Chairman.

16 First of all as a member of the
17 subcommittee, I want to say that I certainly
18 endorse the recommendations. I have a number
19 of comments both on them, and on some of the
20 discussion up to now.

21 One is on Phil's answer to the
22 question of a few versus one possible regional

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1 consolidated storage site.

2 I just want to emphasize at least
3 in my view, it's not obvious which way it cuts
4 in terms of public acceptance, the question of
5 one versus several.

6 It's not, obviously, I think in
7 favor of one because of equity issues,
8 transportation issues, etcetera.

9 Secondly, I just wanted to
10 reemphasize on the liability discussion that
11 occurred, discussion we had with Glenn
12 Podonsky that - to not forget there are now -
13 there's another date which is the date for the
14 agreements on the defense sites to move waste.

15 And we need to keep that in mind as another
16 liability - looming liability issue as we once
17 again find that we will be violating the laws
18 of physics to meet the law.

19 Three, I think on the question of
20 Al's question on interim, I think we should
21 remember that when we say "century scale,"
22 we're talking about a planning horizon, and

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1 not a commitment to keeping it for a hundred
2 years. Because we may decide earlier that
3 it's a waste and we have a place to put it.
4 We may decide earlier it's an energy resource
5 and do something with it, something that will
6 be certainly more towards the century
7 timescale.

8 Fourth, we've had a number of
9 discussions here today, and many of the
10 recommendations raised the issue of both what
11 Per mentioned in terms of contracts, but also
12 statutory changes.

13 And I think we need to be frankly
14 in this subcommittee, but overall, much more
15 explicit on statutory and contract change
16 requirements. And perhaps go more into
17 specifying what some of those statutory
18 changes should be.

19 Fifth, I think on the
20 transportation recommendation, we would do
21 well to emphasize the European experience.

22 I mean, I think in the disposal we

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1 take advantage very much of experience
2 elsewhere. And here, similarly, the simple
3 fact that Europe has already moved fuel on the
4 scale that we are talking about for 70,000
5 tons, I think, is an important point to keep
6 always in the foreground.

7 We're not inventing a
8 transportation system that hasn't been already
9 invented elsewhere.

10 Sixth, on the question of the new
11 organization, while having access to the Waste
12 Fund is critical, I don't want us to lose
13 sight of the fact that it needs a lot more
14 authorities than just that to be successful.

15 For example, this issue of
16 ordering, of taking fuel. If it's stuck with
17 the current arrangements, that doesn't help it
18 do its job. But also looking forward
19 especially in the context of potentially other
20 fuel cycles, it's got to have a say in what
21 kind of waste forms and what kinds of waste
22 streams are created, and not just say here it

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1 is, take it, and figure out what to do with
2 it.

3 And seventh, as the chairs go ahead
4 on their own to incorporate the Fukushima
5 lessons -

6 (Laughter.)

7 MEMBER MONIZ: -- I do think that
8 there should be explicit consideration as to
9 whether and how the Waste Fund is used for all
10 or part of the additional costs in terms of
11 storage that might be - that might ensue.

12 MEMBER SHARP: This co-chair, and I
13 suspect I speak for my other one, have no
14 intention to go ahead on our own without a
15 conversation with you and the subcommittee and
16 the full commission.

17 And secondly, as you know, I think
18 you've rightly raised the question on the new
19 organization. I didn't mean to brush over
20 that too lightly except to say that really is
21 - there's a whole package of authorities and
22 responsibilities and whatnot that a lot of

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1 time has been spent on by the other
2 subcommittee.

3 So, I was simply incorporating it,
4 but I see what you're saying is there are some
5 related to storage and transportation.

6 MEMBER MONIZ: Well, and it
7 certainly goes very strongly to this issue of
8 what is - what does or does not require
9 statutory action.

10 MEMBER SHARP: Absolutely. Well,
11 that new organization unquestionably requires
12 -

13 MEMBER MONIZ: And as far as your -
14 as far as your future work plans, we'll be
15 right behind you.

16 (Laughter.)

17 CHAIRMAN HAMILTON: Allison.

18 MEMBER MacFARLANE: Thank you, Mr.
19 Chairman. Just a couple questions.

20 Let me just start where Ernie left
21 off and say, you know, considering the
22 discussion we had this morning with the NRC

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1 about Fukushima and spent fuel pools, I just
2 want to get on the record that you guys are
3 going to consider the advantages of moving
4 from the dense rack configuration that now
5 exists in the US pools to an open-cage low-
6 density design in the pools. And so that's
7 one question.

8 And then the second question has to
9 do with the size of these interim storage
10 facilities. And I don't think you mentioned
11 that, Dick, when you were talking about them,
12 but I'm just trying to get an order of
13 magnitude.

14 Are we talking 5,000 metric tons,
15 or are we talking more like the PFS size of
16 40,000 metric tons? What are you guys
17 envisioning?

18 MEMBER MESERVE: Let me say with
19 regard to the - exactly where we go with the
20 spent fuel pools, this is an issue that is
21 being evaluated as we speak.

22 We don't know, in fact, what's

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1 happened in the spent fuel pools in Japan, as
2 we heard this morning.

3 Initially it appeared that there
4 was, you know, a complete drain-down event and
5 presumably hydrogen reaction with that fuel
6 that caused that Unit 4 to have an explosion.

7 Obviously if they didn't lose the
8 water, the hydrogen didn't come from that
9 unit. And so, what exactly has happened - so,
10 what exactly happened with that event and what
11 its implications for spent fuel pools is a
12 more general matter. Something I think that
13 we just need to watch.

14 Obviously if there are implications
15 for us, we'll deal with them, but I don't - I
16 would be hesitant in promising that we're
17 going to have very clear answers on that over
18 the next month or two because of the - we
19 don't understand the accident sequence let
20 alone the implications.

21 But certainly on the table for
22 consideration that is very clearly something

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1 that people are talking about, is going to
2 getting material out of the spent fuel pools
3 into dry cask storage for safety reasons. And
4 that's very much on the agenda that we should
5 follow.

6 As to the size of the facility, I
7 think that we envision that, as Phil
8 indicated, that, you know, initially we have
9 fuel that's at nine sites. It's a relatively
10 small volume of fuel. That's the material
11 we'd like to move early and we ought to have a
12 storage facility that's capable of that.

13 MEMBER MacFARLANE: Just to clarify,
14 that's the orphaned fuel. That's at the five
15 decommissioned - I mean the nine
16 decommissioned sites.

17 MEMBER MESERVE: They're not
18 orphaned. It's not orphaned. There are
19 owners. There are people watching them very
20 carefully, but they are ready for adoption.
21 Exactly right.

22 (Laughter.)

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1 MEMBER MESERVE: So that fuel - but
2 then, you know, we start to get out to the
3 sort of the end of the next decade. There's
4 going to be a large number of plants that are
5 decommissioned. And so, you ought to
6 anticipate there's going to be substantial
7 volumes of fuels that need to be moved at that
8 time if we're going to allow them to get the
9 fuel off the sites as they decommission the
10 reactor.

11 So, I would envision an interim
12 storage facility that starts out relatively
13 modest in size, perhaps. But then over a
14 period of a decade or two, we'll have to grow
15 to be able to accommodate the accumulated
16 inventory.

17 MEMBER MacFARLANE: Well, just one
18 caveat on that that I think we should take
19 into consideration is that, you know, it
20 depends on the agreement I imagine that you
21 have with the community and the state as to
22 some communities and states may say, okay,

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1 we're happy to have an interim storage
2 facility here. We're going to limit the size
3 of it though, and that's going to be bad. And
4 you're not going to grow.

5 So, I think we have to take those
6 kinds of potential outcomes into
7 consideration.

8 MEMBER MESERVE: We certainly do.
9 But let me say that I think that part of the
10 discussion with any community should be
11 completely transparent of what we know and
12 what we don't know and what optionality needs
13 to be preserved.

14 And that there's got to be much
15 clearer understandings and commitments on both
16 sides that each side lives with and fulfills.

17 And that's been one of the problems that is
18 in this area is that people have made promises
19 they have not kept.

20 MEMBER SHARP: If I could just join
21 a little bit in dampening expectations that my
22 colleague just did about what to expect us to

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1 recommend out of Fukushima, I think there is a
2 general, common way in which we're approaching
3 many of these highly technical questions in
4 which we are not making technical
5 recommendations at the end of the day.

6 Some of you on the commission have
7 expert and technical knowledge, but many of us
8 do not. And it would be inappropriate for us
9 to declare we know exactly how to manage
10 certain technical things.

11 So, while we may talk about
12 direction or we may talk about this is an
13 imperative that the NRC should examine and
14 come to a public conclusion about, it's not
15 clear how far we will go in actually saying do
16 X, we know exactly how to manage that pool and
17 what the configuration ought to look like and
18 at what time you ought to get the stuff out of
19 there.

20 CHAIRMAN HAMILTON: Okay, John, also
21 a member of the subcommittee.

22 MEMBER ROWE: Just as a member, I

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1 certainly agree with the recommendations. And
2 in spite of Chairman Sharp's humility, both he
3 and Chairman Meserve have put a great deal of
4 wisdom into this work.

5 I would simply like to add that
6 painful though it is to conclude, you know,
7 the recommendations of this subcommittee are
8 inherently conjoined with the recommendations
9 of the Disposal Committee in ways that simply
10 cannot be separated.

11 As somebody who really does like
12 clear, linear solutions, the emphasis we have
13 here on an open consultative, consensual
14 process isn't entirely a happiness to me, but
15 I'm absolutely convinced it's essential.

16 And more than that, it will only
17 work if it's combined with an equally
18 persistent and effective process for getting
19 an ultimate disposal site.

20 Because one of the things that
21 makes finding an interim site so hard as every
22 member of the subcommittee, certainly the co-

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1 chairs are keenly aware, is that people are
2 afraid there will never be the other shoe
3 dropping.

4 And the problem we have here is
5 that citizens in various states, even
6 relatively insensitive people like utility
7 executives, are suffering the pangs of what
8 they feel to be fifty years of betrayal.

9 And so, it is terribly important
10 that we understand that this is a very
11 important part of a constructive process, but
12 it's a part that cannot stand alone.

13 It ties to the Disposal
14 Subcommittee's recommendations insofar as the
15 new federal corporation or whatever it is, is
16 concerned. It ties in that this part of the
17 process only has credibility if there is a
18 newly credible process for getting the
19 ultimate disposal site.

20 And like all things in a democratic
21 society which has its element of sausage
22 making, it requires a process that is both

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1 honestly scientific and, to some extent,
2 commercially interactive with the potential
3 host sites.

4 People who may get these facilities
5 have to see benefits that they see as being
6 commensurate with the burdens. And that turns
7 out to be a negotiation, not an argument.

8 CHAIRMAN HAMILTON: Okay, John.
9 Thank you very much. Pointing out the
10 linkages between the subcommittees is an
11 important observation.

12 Chairman Scowcroft and I kind of
13 wrestled with that when we set up the
14 subcommittees and we recognized the overlaps,
15 if you will. And, therefore, the cooperation
16 among the several subcommittees, which has
17 indeed taken place, has been very
18 constructive.

19 Well, thank you, Dick and Phil.
20 Thanks to the members of the subcommittee for
21 an excellent report on the work. The
22 recommendations of course we will cover in the

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1 afternoon sessions, the review of the draft
2 recommendations of the Disposal Subcommittee,
3 and then the Reactor and Fuel Cycle
4 Subcommittee.

5 We will stand adjourned until one
6 o'clock.

7 (Whereupon, the above-entitled
8 matter went off the record at 12:12 p.m. and
9 resumed at 1:04 p.m.)

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

1:04 p.m.

MR. FRAZIER: Okay. We are now getting dangerously close to getting started again. 1:04.

I know that Dr. Meserve is on his way back. There's Phil. Susan is also on her way back.

Vicky, Commissioner Bailey, it's entirely your call.

MEMBER BAILEY: All right. Commissioner Lash will be the first presenter. Most of your committee is here, I think - subcommittee, all right.

We will now ask Commissioner Lash to present the recommendations of the Disposal Subcommittee. We understand that Commissioner

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1 Hagel had a longstanding commitment on the
2 west coast, and he regrets that he cannot join
3 us today.

4 We'd like to extend a special
5 thanks to Commissioners Lash and Hagel because
6 their subcommittee volunteered to dig deeply
7 into several of the key cross-cutting issues
8 facing the commission, including the facility
9 siting process, the roles of tribal, state and
10 local governments, the governance of the waste
11 management program and funding considerations.

12 These are all very big issues, and
13 we thank you and your subcommittee for your
14 work.

15 So, Jonathan, please proceed.

16 MEMBER LASH: Madam Chair, thank
17 you. And Senator Hagel did ask me to
18 communicate to all of the members of the
19 commission that he really very badly wanted to
20 be part of this and strongly believes in this
21 set of recommendations.

22 I think aside from Senator Hagel,

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1 all of the members of our subcommittee are
2 present here. And I'm grateful to all of you
3 for your work.

4 I will aspire to achieve the level
5 of clarity that Commissioner Meserve and
6 Commissioner Sharp achieved in presenting
7 their recommendations.

8 I do want to offer a couple of
9 cautions before I get into the
10 recommendations.

11 This draft is a very good
12 reflection by the staff of a set of
13 discussions among the commissioners over a
14 period of eight months, but it isn't a
15 finished work.

16 First of all, it does not reflect
17 all of the comments of the members of the
18 subcommittee after the draft was prepared. We
19 simply haven't had time to incorporate all of
20 those comments, let alone the comments of
21 other members of the commission.

22 Secondly, there is still some

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1 ongoing work that we are having done to help
2 us answer some of the questions about
3 structures of the new entity that we recommend
4 and so forth.

5 In a sense, that's good because it
6 offers us both the opportunity to get your
7 comments, and particularly to respond to
8 public comments.

9 We know we have further work to do,
10 and we want to do that in light of the
11 comments we get from the commissioners and
12 from the public.

13 We do recommend a set of changes
14 that will require statutory action. And I'll
15 try to be mindful of what several of you said
16 that we ought to be clear where we're making
17 those recommendations, because they will
18 require both time and significant effort to
19 achieve.

20 Okay. Here we go. The members of
21 our committee - there we go. We had one
22 fundamental question to answer since it was

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1 the Disposal Committee. How do we go about
2 establishing appropriate facilities for
3 disposal of high-level wastes, and how do we
4 do that within a time frame and in a manner
5 that is feasible economically and technically,
6 but also politically and socially acceptable?

7 We looked at that in terms of is
8 there any scenario under which a disposal
9 facility would not be needed? And what could
10 we understand about the processes that were
11 most likely to result in successful siting
12 after - John, how did you describe it - fifty
13 years of broken promises?

14 We have not mastered the
15 technology.

16 (Laughter.)

17 MEMBER LASH: What makes it
18 confusing is it works sometimes. I think when
19 Pavlov did those experiments, the most
20 effective training was when you kept the dogs
21 confused, right?

22 (Laughter.)

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1 MEMBER LASH: We had a number of
2 open sessions. We heard from a long list of
3 witnesses. We had a number of closed
4 deliberative sessions. Some members of the
5 subcommittee participated in a classified
6 briefing.

7 We also made trips to see
8 facilities both in the United States and in
9 Europe and in Japan. I think we were
10 particularly struck by what we saw in Finland
11 and in Sweden. And members of the committee
12 were also influenced by the successful
13 operation that they saw at WIPP in New Mexico.

14 In each of the cases where we
15 visited a facility, we went out of our way to
16 meet not only with officials, but with
17 representatives of the industry, and
18 representatives of the communities and
19 interested non-governmental organizations.

20 First recommendation is an
21 unequivocal answer to the first part of the
22 main question. We do need disposal.

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1 Under any set of circumstances that
2 we can imagine, we will need disposal. There
3 is no scenario under which the United States
4 will not have substantial amounts of high-
5 level waste to dispose of.

6 Even if we change our strategy with
7 regard to the operation or expansion or
8 contraction of the industry, even if
9 technology changes and we move toward
10 reprocessing, we will still need permanent
11 disposal for substantial amounts of high-level
12 waste.

13 And although we looked at a variety
14 of alternative means of disposal, as of now a
15 - talking about digging deeply, a geologic
16 disposal, a mined repository, is the most
17 promising, the best accepted. It is the
18 option on which there's the most information.

19 It is the option which is moving ahead in
20 those countries that are moving most quickly
21 toward establishment of a long-term
22 repository.

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1 We also felt it important to make
2 the point that there is an ethical obligation
3 to disposal.

4 The United States has benefitted
5 from both the creation of electricity from
6 reactors that created some portion of the
7 wastes, and also from the security that we got
8 from the production of weapons that generated
9 other portions of the waste.

10 It is our waste. It is largely in
11 our generation that these wastes were created.

12 And we have an obligation, therefore, to
13 provide for the safe disposal of the waste as
14 best we can.

15 In this context, nothing that we
16 have seen from Fukushima suggests any change
17 in that sense of obligation. If anything, it
18 makes it appear more urgent that we move ahead
19 with the creation of a permanent mined
20 repository.

21 So, before I leave this
22 recommendation, I just want to be unequivocal

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1 here.

2 We endorse the recommendations of
3 the Storage and Disposal Committee, but those
4 recommendations as Commissioner Sharp said, do
5 not in any way vitiate the need for long-term
6 disposal.

7 Second, and another very important
8 recommendation as mentioned by Commissioner
9 Sharp earlier, we recommend the creation of a
10 new single-purpose entity to take
11 responsibility for the siting and operation of
12 a waste facility, and the responsibility for
13 the creation of interim storage and oversight
14 of the transportation of wastes.

15 We reached that conclusion because
16 we think that a single-purpose entity is most
17 likely to be successful in achieving this
18 mission.

19 It is a difficult position that
20 we've put the Department of Energy in as a
21 generator of waste responsible for technology
22 research to promote the industry and think of

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1 the path forward, and trying to create a waste
2 repository.

3 Other countries have taken a
4 different path in relying on a single-purpose
5 entity. We think that would be beneficial.

6 Secondly, we think that it is most
7 likely that a new single-purpose entity can
8 develop the culture that I'll describe in a
9 moment of transparency, inclusion, engagement
10 that we think is essential to build trust in
11 order to have the best hope of successfully
12 siting a facility.

13 And that such an agency can begin
14 to develop the relationships that will be
15 necessary to make and have communities rely on
16 long-term commitments surrounding a repository
17 that is designed to be safe for hundreds of
18 thousands of years.

19 We think it is that the precise
20 form of the entity is less important than the
21 approach that it takes. Although we've done a
22 good deal of work looking at examples that

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1 exist within the federal government now like
2 the Tennessee Valley Authority, other
3 independent federal corporations, we would
4 emphasize that the most important aspects are
5 not so much the structure as the attributes of
6 the organization, including particularly a
7 commitment to transparency, to full-scale
8 ongoing participation by all affected
9 interests, to responsiveness to the concerns
10 of communities, state agencies, local
11 agencies, civil society organizations, to
12 accountability for its actions and ability to
13 maintain and live up to commitments, to the
14 underlying notion that building trust and
15 confidence is as important a part of the
16 process as technical excellence.

17 Technical excellence is essential,
18 but it won't accomplish the purpose without
19 trust and confidence. And we think all of
20 that can be built around an organization that
21 has a strong mission orientation.

22 We have a number of recommendations

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1 about how the entity will go about its
2 process. I'll come to those a little later.

3 We think it would be important for
4 it to set up a widely representative siting
5 council. Of course its relationship with
6 state, local, regional and tribal government
7 will be important. I'll get to that a little
8 later.

9 There will be important questions
10 about the role of congressional oversight with
11 regard to this entity.

12 Obviously, Congress has the
13 responsibility to assure that this program is
14 operated in a way that protects the interests
15 of the American people and their safety and to
16 intervene if this entity begins to diverge
17 from its statutory mandate and its mission.

18 At the same time, it has to be able
19 to make very long commitments and live up to
20 them. And so, constant political intervention
21 is entirely inconsistent with that.

22 We are working on how you define a

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1 level of oversight that achieves that
2 obligation of protecting the safety and
3 interests of the American people without
4 resulting in the kind of constant interference
5 that makes it impossible for an agency to make
6 hard decisions.

7 On this, I particularly wish that
8 Senator Hagel were here, because he has very
9 strong views and is quite cogent on this
10 issue.

11 But without access to the funds,
12 which I'll talk about in a moment, and without
13 the ability to operate with general
14 congressional approval and make long-term
15 plans, none of this can work. The rest of it
16 really becomes quite irrelevant.

17 The last relatively minor point
18 about this entity, we view it as primarily an
19 operating entity, not a research entity.

20 There would be some research issues
21 on other forms of disposal that it ought to
22 have responsibility for. But in terms of the

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1 rest of the back end of the fuel cycle, that
2 should remain with DOE, not be part of the
3 responsibility of this organization.

4 So, Number 3. Look at that.
5 Money. I can only reiterate what Commissioner
6 Sharp said earlier. The producers of waste,
7 really the consumers of electricity, have paid
8 and are paying for the disposal of waste.

9 The program committed to execute
10 that disposal of waste has not had consistent
11 or adequate access to the funds that are paid
12 there by the producers of waste.

13 The reasons are complicated. We've
14 done quite a good deal of work on how that
15 happened and the set of decisions that led to
16 that, and I'm not going to talk about them,
17 because I'll get confused - but the
18 recommendation is relatively simple.

19 Congress should make changes that
20 assure that the new entity has access to those
21 funds so it can operate in a predictable
22 manner. And there is the opportunity for the

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1 administration through executive action, to
2 reverse some of the most serious decisions
3 that limit the access of the entity to the
4 Waste Fund.

5 There is a very good paper on how
6 that could be done, essentially by a set of
7 decisions by the Office of Management and
8 Budget, which will be posted on the website
9 soon.

10 And I suggest that members of the
11 commission may want to look - this is about
12 money. It does have an impact on the federal
13 budget, the set of decisions that we would
14 urge the administration to make, but it would
15 be an enormous gesture of good faith and of
16 conviction on the part of the administration
17 that they wanted to move ahead with a robust
18 program to create both interim storage and
19 disposal facilities.

20 But just to emphasize, again, the
21 current situation isn't working. It doesn't
22 provide consistent funding. We have to do

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1 something about that in addition to creating
2 sufficient authorities as Commissioner Moniz
3 pointed out for the new entity to be able to
4 operate.

5 Recommendation 4 is about how we
6 would like the new entity to approach its
7 task. And it is a distillation both of the
8 experience of the past fifty years, and of
9 what we saw in Finland and Sweden and
10 discussing the issue with our colleagues from
11 Canada, we believe that siting is most likely
12 to succeed.

13 And John has said repeatedly to us
14 what he said earlier this morning, that some
15 of these recommendations cause some concern,
16 but they seem necessary to create a successful
17 siting process.

18 We believe that a community chosen
19 for a site should be able to decide to
20 withdraw from the process. That this has to
21 be consent based.

22 That that consent is most likely to

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1 be secured if the process is entirely
2 transparent. Transparent beyond just
3 information is there and to the point of
4 actively trying to make information available,
5 help people understand what the issues are.

6 Everything we have learned suggests
7 that it is important that the process be a
8 learning process. That's essentially what we
9 mean by phased and adaptive. That it be
10 possible to make decisions over a sequence of
11 time and learn from each stage what might
12 contribute to making the next stage more
13 effective.

14 And, finally, it has to work
15 according to established general, not site-
16 specific, science-based standards that are
17 understandable and available to all of the
18 participants in the process.

19 That is the rules have to be clear
20 and the rules have to be general, not created
21 for specifically one site or one purpose.

22 We noted that when the commission

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1 visited Carlsbad, when we had conversations
2 with those involved in the WIPP process, there
3 was a general agreement that the process had
4 been sufficiently open that all of the players
5 thought that they knew what they needed to
6 know to make informed decisions.

7 That funding was available for
8 state agencies in order to be able to
9 effectively oversee the process. And that the
10 state was given a role as a regulator as it
11 would have under EPA statutes applicable to
12 other facilities as well.

13 And that arrangement in which the
14 state was a regulator, the process was
15 transparent, everyone had the capacity to
16 participate, seems to have led to a good
17 outcome.

18 I missed one thing I wanted to say
19 with regard to this recommendation. One of
20 the most difficult issues is thinking about
21 the role of state and tribal governments in
22 this process.

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1 It's clear that they have both a
2 capacity and reason to participate
3 effectively. And they should have a forum
4 through which they can actively engage in a
5 set of decisions around siting and design.

6 At the same time, we do not
7 recommend the creation of a state veto. While
8 we think local communities should be in a
9 position to withdraw from the process if they
10 choose, we think that it's more effective for
11 states and tribes to have a regulatory role
12 than have a veto, and that the pressures on
13 states to exercise a veto, if they have a
14 veto, may simply be too great.

15 We hope to get comments from states
16 and local governments and tribes on our draft.

17 We have not - we don't have a clear set of
18 recommendations from those entities yet.

19 We're trying to fashion something
20 that workably and fairly reflects the
21 responsibilities of state governments and
22 communities, but still retains a process that

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1 might lead to successful siting.

2 The current arrangement as we all
3 heard in testimony before the full commission
4 I think last summer, is that EPA issues
5 performance standards, and NRC makes a set of
6 key regulatory design decisions.

7 It is a divided responsibility that
8 I would say, personally, initially struck me
9 as not very efficient. And our subcommittee
10 ended up after spending quite a good deal of
11 time looking at this saying it may not be very
12 efficient, but we actually can't think of
13 anything better.

14 It seems workable. The NRC has
15 enormous technical expertise that is
16 appropriately applied to the specific
17 licensing decisions that will be necessary for
18 licensing of a deep geologic repository.

19 The EPA has long experience and
20 effective processes for the development of
21 broad performance standards.

22 And we think that arrangement can

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1 be made to work. And can be made to work, in
2 fact, better than it has in the past if
3 there's more coordination mandated between the
4 agencies, if to the extent possible they rely
5 on regulatory negotiation, and if they
6 effectively use advisory committees to oversee
7 the process.

8 We also would note that current
9 regulation is not sufficient. The current
10 rules were created for a specific purpose, and
11 it will be necessary to go back and create
12 site-independent safety standards.

13 And we think that that can be done
14 consistently with the pace at which it will be
15 possible to move forward to create a new
16 agency and begin to collect information on
17 sites, but it needs to be done promptly.

18 We heard a number of
19 recommendations in this area, but the ones we
20 found most compelling were those that
21 suggested that a negotiated process and the
22 application of the principles of transparency

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1 would be effective in moving ahead in this
2 area.

3 This is going back to the specifics
4 of the roles of tribal government, state
5 government, local governments. This
6 recommendation is not as specific as we would
7 like ultimately to be with your help.

8 And this decision, as I said
9 earlier, will be key to the workability and
10 also acceptability of the standard. Much of
11 it will depend on the extent to which the new
12 entity develops an effective relationship with
13 affected state, local and tribal governments.

14 Again, if the rules are clear and
15 consistent, if the process is sufficiently
16 open and inclusive, we believe that this
17 arrangement could be made to work.

18 All levels of government have to
19 feel that they will have a full opportunity to
20 represent the interests of the people who have
21 chosen them in participating in the process.

22 Finally, we wanted to be clear that

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1 we think the Nuclear Waste Technical Review
2 Board is a valuable source of technical advice
3 and independent review.

4 We would like, if anything, to see
5 it strengthened and to assure that its
6 membership reflects a broad range of
7 professional skills and expertise. And that
8 its mandate is clear that it is to be
9 independent.

10 And that will help the new entity
11 in operating effectively. It will be useful
12 to them, not an interference to have a set of
13 expert independent critics of its work.

14 We have not - again in this area,
15 it may be that we will come up with more
16 specific recommendations based on your
17 comments.

18 That was a quick rendition of 130
19 pages of recommendations and hundreds of hours
20 of work by my colleagues on the committee and
21 the members of the staff.

22 Let me just close with one

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1 addition. We fairly quickly coalesced around
2 the essence of these recommendations. That is
3 the need for disposal, deep geologic disposal,
4 a new entity, a new process that is open,
5 inclusive and consent based.

6 There's a great deal of detail
7 surrounding those recommendations and we have
8 a lot of work to do still on that detail.

9 Thank you.

10 MEMBER BAILEY: Thank you,
11 Commissioner Lash. We will use the same
12 process that we used earlier with members of
13 your subcommittee asking questions, and then
14 the fellow commissioners expanding it from
15 there.

16 And I'm going to open it with the
17 first question, and I think Commissioner Moniz
18 mentioned it earlier. And that's the issue of
19 defense and civilian waste.

20 And I know we did talk about that,
21 the issue of commingling it or not commingling
22 it. And I'd like to hear the views of your

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1 thoughts, Commissioner Lash, and those on your
2 subcommittee as to that issue.

3 MEMBER LASH: Madam Chair, as you
4 know having sat through these discussions, we
5 discussed the issue. I'm not sure we reached
6 a clear conclusion, and I certainly don't feel
7 technically well enough informed yet to reach
8 a conclusion.

9 I know a number of members of the
10 subcommittee have strong views and I've read
11 comments from non-subcommittee members as
12 well. So, we know we have to go back and dig
13 into this one again.

14 MEMBER BAILEY: And I think it's the
15 thought, maybe, of the real two co-chairs that
16 they would like the Disposal Committee to look
17 at that issue and maybe come back, do a little
18 deeper dive into that and come back and give
19 us - investigate that matter maybe over the
20 next few months and report back in the fall.

21 All right. Other comments,
22 questions. All right, I've got to take these

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1 -- I've got to get to work here.

2 Okay, Per. Commissioner Peterson.

3 MEMBER PETERSON: Thank you. I have
4 one general observation, and then three
5 specific questions.

6 The first is just to note that when
7 we entered into this process, I was actually
8 skeptical that voluntary processes could work.

9 I thought that we would likely be
10 in a position of having something that would
11 look like Base Reauthorization and Closure
12 type of process.

13 I can report that based on the
14 opportunities to travel to Finland, to Sweden,
15 to other parts of the United States to discuss
16 with people, that I am now quite confident
17 that if we enter into this type of process,
18 that it is likely to be successful and that it
19 is likely to generate much better outcomes.

20 In particular, if we note that by
21 developing in parallel both some consolidated
22 interim storage and disposal capabilities,

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1 that we're not going to stuff the entire
2 problem onto a single state and isolate them
3 as the only state carrying the entire burden.

4 And I think that if we do that,
5 that I have confidence that we can be
6 successful. And I did not come into this
7 process believing that. So, I think that it's
8 important to note that my thoughts on that
9 have changed.

10 I have three specific points to
11 raise. The first is on this question of
12 defense versus civil waste, I had a chance to
13 speak with Commissioner Moniz a little bit
14 after this. And I don't think that people
15 here want to have a firm division between
16 defense and civil waste.

17 For example, there is a small
18 amount of civilian high-level waste stored at
19 the West Valley plant in New York. And I
20 don't think it would make a lot of sense to
21 prohibit that from going into a repository
22 that was developed, say, principally for high-

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1 level waste from defense.

2 Likewise, we have civilian Three
3 Mile Island-damaged fuel in storage at Idaho
4 National Lab. And it probably would not make
5 sense to prohibit that material from going
6 into repository that the naval spent fuel from
7 Idaho National Lab might go into.

8 So, I would think that perhaps we
9 can have - we can think about the question of
10 specializing the purpose of repositories, but
11 maybe not to divide it strictly by the origin
12 of the materials.

13 The next thing I'd like to note is
14 that I also believe that it's critically
15 important to develop a new safety standard for
16 repositories, geologic disposal facilities,
17 that is site independent.

18 I think that we also should strive
19 to assure that it is sufficiently flexible
20 that in fact it could also be used to license
21 a facility based on, say, deep borehole
22 technology in addition to mined geologic

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1 repository.

2 If you develop it that way, it will
3 be a performance-based type of standard and
4 that you will not - you will not have a
5 standard that ends up actually inadvertently
6 prescribing the method for achieving the
7 performance as opposed to prescribing what the
8 performance needs to be.

9 The third thing that I'd think
10 about, and this is also a rather specific
11 point, but I think it's important, one of the
12 important elements of being successful in
13 siting is to provide appropriate and
14 substantive incentives to those communities
15 and states that would take on responsibilities
16 for hosting facilities.

17 The current Nuclear Waste Policy
18 Act actually would direct research funds
19 preferentially. And I think - and there's
20 been discussion with members of the commission
21 that it's not a good idea for research awards
22 to be awarded on criteria other than merit and

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1 capability, but I would point out that I think
2 that it is entirely inappropriate that
3 research facilities, national user facilities
4 infrastructure could be directed in this way.

5 And the example was mentioned, for
6 example, of facilities to study the long-term
7 performance of dry cask storage. And I'd like
8 to see us recommend that that detail in the
9 Nuclear Waste Policy Act be fixed. Because as
10 a matter of philosophy coming from a career of
11 performing research, I do think it's important
12 that we maintain this requirement that
13 research really - funding for research should
14 be awarded based on merit and on capability as
15 opposed to where you are.

16 Infrastructure, on the other hand,
17 that is something that is a very different
18 item. These are the three things that I would
19 note.

20 MEMBER LASH: Just a quick comment I
21 meant to emphasize, and you've reminded me,
22 that that is one of the things that we've

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1 found consistently not just in the US, but
2 globally that communities that receive
3 technical facilities, research facilities
4 have, in general, been more receptive to the
5 location of waste facilities.

6 MEMBER BAILEY: Thank you,
7 Commissioner Peterson. And he is a member of
8 the Disposal Subcommittee.

9 Another member, Commissioner John
10 Rowe.

11 MEMBER ROWE: I got to the
12 conclusions this subcommittee reached for
13 differing reasons than Commissioner Peterson.

14 I still am not as optimistic as he is, but I
15 am painfully convinced that we have tried
16 shortcuts many times. And it's the effort to
17 make the shortcuts that is causing at least a
18 large portion of our problem.

19 And, therefore, I think we have no
20 choice in these matters but to trust
21 consensual process and to try to work through
22 it in great detail.

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1 And recognizing that it is a mix of
2 good science, good advocacy and, in the end,
3 just plain old-fashioned dealing.

4 I was very moved by the number of
5 people from Nevada who said we wouldn't have
6 been so angry if you'd have negotiated with us
7 instead of telling us and if we'd had some
8 chance to bargain.

9 I can't help - Per, this is mostly
10 just to tease. It is clear that R&D is too
11 important not to do on merit. But plain old
12 infrastructure, that we can do on cruder
13 principles.

14 (Laughter.)

15 MEMBER ROWE: And for those of us
16 who think that professors are very mobile and
17 iron and steel quite difficult to move, I
18 would submit that talent can be found in many
19 places and they're not confined locationally.

20 MEMBER PETERSON: Point taken.

21 MEMBER BAILEY: Thank you,
22 Commissioner Rowe.

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1 Another member of the subcommittee,
2 Commissioner Mark Ayers.

3 MEMBER AYERS: Thank you. You know,
4 I just want to say, and Jonathan already made
5 the point, but I guess I want to take it a
6 little bit further.

7 You know, there are so many
8 talented and dedicated and technical and every
9 other kind of person you could ever want on
10 this subcommittee, but I have to tell you that
11 the really talented people are the staff that
12 put these reports together.

13 I mean, they're massive. It took
14 me a week to read them, but they're very
15 comprehensive. So, I just want to give kudos
16 to the staff because I think they really
17 effectively captured the issues that was
18 explored by this subcommittee.

19 MEMBER BAILEY: Thank you very much,
20 Commissioner Ayers. That is important to say.

21 And that is something I think we all truly
22 feel, and thank you for saying it.

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1 Another member of the subcommittee,
2 Commissioner MacFarlane.

3 MEMBER MacFARLANE: Thanks, Madam
4 Chair.

5 I guess I just want to chime in and
6 say that I think, you know, Jonathan, you did
7 a great job leading us in this subcommittee.
8 I don't know that we'd be here without your
9 direction.

10 But also, I think just one sort of
11 question or observation, I think that the
12 actual process of siting which really isn't
13 discussed in these recommendations, is
14 something that we still need to elucidate
15 further in our thinking, including whether you
16 look for a voluntary community or whether you
17 approach communities or you do both, or you
18 fail one and what's your Plan B. You better
19 have a Plan B this time, because we don't have
20 a Plan B now.

21 How you bring the public in, where
22 the public participates, how they actually get

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1 to be part of this whole process, you know,
2 yes, it's good to say it's consent based, but
3 what does that actually mean? How do you
4 operationalize that?

5 What kind of technical criteria?
6 What kind of compensation you provide not just
7 to the community or the state, but also to
8 groups to do their own analyses.

9 This is all something that we have
10 been thinking about, I want to make that
11 clear, and that we'll put a finer point on.

12 MEMBER LASH: Yes.

13 MEMBER BAILEY: I can attest to
14 Commissioner Lash's leadership. I think he -
15 was it in Sweden or Finland that he had us in
16 the back of the bus going over these issues?

17 (Laughter.)

18 MEMBER LASH: You were captive.

19 MEMBER BAILEY: I was captive,
20 right.

21 We now have - okay. We have
22 Commissioner Meserve.

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1 MEMBER MESERVE: First of all, thank
2 you for the report. I was not on the
3 subcommittee and it was important -
4 interesting to get the report from it.

5 A couple of minor points. One is,
6 is that I'm quite comfortable with your
7 recommendations.

8 Let me just point out that the
9 recommendation about having a process for the
10 facility that is adaptive and flexible and
11 allows you to learn and change over time is
12 something that's been encouraged. In a
13 National Academy of Sciences report, that's
14 emphasized some time ago.

15 It is important to recognize,
16 however, and perhaps deal with the reality
17 that that is going to require some changing
18 thinking by the NRC about how it proceeds in
19 licensing.

20 It's very accustomed, in the world
21 of reactors, there's a set of distinct
22 requirements that are met. And the licensee

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1 says, oh, he's going to meet them. And you
2 meet them. And they inspect against them.
3 And you do what you said you were going to do
4 when they verify you've done it, having a more
5 flexible, adaptive process is going to be
6 quite foreign to the way they think about how
7 they fulfill their regulatory responsibility.

8 And so, there is quite an
9 interesting and licensing challenge for them
10 that does require a different mode of how they
11 approach licensing. And I just sort of flag
12 that for the subcommittee as something that
13 does need to be worried about if you haven't
14 already.

15 Second comment I just - a point
16 that I think I should say that there are site-
17 independent licensing standards that exist.
18 The NRC has them in Part 61, for example, but
19 the idea of revisiting them I think is very
20 important.

21 They were written a long time ago,
22 you know. We've learned a lot. Since then

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1 there's been a lot - technical advance has
2 been a considerable policy advance, including
3 policy advance that I think that is embodied
4 in your recommendations that does require this
5 to be reexamined, but there is an existing set
6 of regulatory requirements that I think that
7 definitely ought to appropriately be revamped.

8 The third point I make is really
9 quite a minor one, but you emphasize in your
10 presentation that R&D related to disposal
11 should be something that's funded and done by
12 DOE and would be disconnected from the new
13 entity.

14 And I can understand that that
15 would be a valuable thing from the perspective
16 of husbanding the Waste Fund to assure that
17 there is a narrow set of purposes that are
18 fulfilled.

19 But I guess I do worry somewhat
20 about the entity that is dependant on the
21 research and has the research problems being
22 disconnected from the process that goes out

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1 and defines the projects to be performed and
2 the performers, and is not in the direct
3 receipt of the research results.

4 MEMBER LASH: I'm sure that there
5 would be a willingness on the part of the
6 subcommittee to respond to a set of
7 recommendations of how to solve that problem.

8 So, the desire was not to have the
9 new entity get diverted off into long-term
10 research on reprocessing.

11 But at the same time if you have to
12 explore whether boreholes are an adequate
13 option, of course the entity should be
14 involved. And we're open to thoughts about
15 how to define all that.

16 MEMBER BAILEY: Let me go back and
17 get Commissioner Eisenhower who is a member of
18 the subcommittee.

19 MEMBER EISENHOWER: Being a member
20 of the subcommittee of course I endorse the
21 findings that were possible with Jonathan's
22 leadership in both Sweden and Finland, and

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1 many other places.

2 I think I would just like to say
3 that I think one of the big challenges of our
4 big idea which is to establish an independent
5 entity for the management of nuclear waste,
6 one of the most challenging aspects of this is
7 going to be access to the Nuclear Waste Fund.

8 All you have to do is read the
9 headlines in the paper every morning about the
10 country's deficit reduction problems in our
11 national debt.

12 And so, I think it's going to be
13 the challenge of this commission in the final
14 report and also as we go out to sell the ideas
15 that we feel very strongly about, to emphasize
16 this notion of an adequate and stable source
17 of funding.

18 And to make the case that actually
19 efficiencies and cost reduction will be
20 possible by actually putting in place a system
21 that is predictable.

22 And so, this is going to be a net

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1 savings for the United States of America, not
2 a raid on the federal treasury whether or not
3 this money was always designated for this
4 purpose or not.

5 There is of course a breach of
6 trust idea which is huge, and this is what
7 this commission's been trying to address not
8 only in the Waste Fund aspect, but also in
9 making siting recommendations.

10 But at the end of the day if we
11 can't sell this as not only critical for the
12 continuation of a well-run nuclear program in
13 the United States, we can't make the case that
14 there are also going to make cost savings,
15 then we're going to have difficulty making the
16 larger case that this is a national energy
17 security issue.

18 MEMBER BAILEY: Thank you,
19 Commissioner Eisenhower.

20 Chairman Hamilton.

21 CHAIRMAN HAMILTON: I just want to
22 follow up on what Susan said, because I think

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1 it's important.

2 Phil and I, and Pete and Chuck have
3 listened a thousand times to people who come
4 to the Congress and say I want assured access
5 to a fund.

6 Every manager in the federal
7 government wants an assured access, and you
8 can't get it. You cannot get it because any
9 congress, even if they set it up, can invade
10 it or will invade it under budgetary
11 pressures.

12 So, I think I'd like to hear from
13 Pete Domenici, he's had a lot of experience on
14 the budget, and maybe some real congressional
15 budget experts here, which I'm not one, of the
16 best way to do it.

17 Now, Susan makes the point that if
18 we make that recommendation, we've got to put
19 in there very, very persuasive reasons as to
20 why it should be an assured fund.

21 And that will give you some
22 protection against invasion, but it doesn't --

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1 it's not permanent.

2 Because what happens is that as the
3 budgetary pressures mount, you're looking for
4 funds of money that you can use somewhere for
5 another priority or to meet budget goals of
6 some kind, cash and all the rest of it.

7 So, I think all we can do probably,
8 Jonathan, is what Susan suggests. And that is
9 say that it's terribly important for reasons
10 of efficiency, national security, whatever the
11 reasons are that you have such a fund, and
12 make that case as persuasively as you can.

13 But there's no guarantee here. No
14 permanent guarantee.

15 MEMBER BAILEY: All right. Thank
16 you, Chairman.

17 Commissioner Sharp.

18 MEMBER SHARP: Just to follow on, on
19 that issue, I think it's very important that
20 we distinguish two major issues here. The
21 first which I indicated earlier, but I would
22 love for us to put clearly on the record, the

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1 money collected has been collected for this
2 purpose. It is there in the treasury. It is
3 to be spent for this purpose in the future,
4 and not let people get away with the idea that
5 somehow that was collected and since it didn't
6 get spent at the time, you know, that's all
7 water over the dam.

8 This is an obligation that the U.S.
9 government has like it has under Social
10 Security. And, therefore, it is there.

11 Now, the other issue we're talking
12 about here is how do you get access in a
13 timely way for the operation of the entity,
14 and that's a tougher one.

15 But, by the way, I also have some
16 faith that you're more likely to get timely
17 access even if you don't get it guaranteed in
18 advance.

19 If you in fact are producing real
20 plans, real actions, real consequences, it is
21 a lot easier to go sell to anybody in the
22 private or public sector as opposed to just

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1 saying, well, give us money and we'll think
2 about it, and maybe next year we'll get it
3 done. That doesn't sell anywhere.

4 And so, one of the issues for this
5 new entity is behavior, its behavior in terms
6 of how it approaches this.

7 Well, I didn't mean to get off on
8 the finances, but I'm like Lee. Everybody
9 wants a guarantee. Everybody wants an
10 independent Federal Reserve until they see one
11 or they have a financial crisis, but I'm all
12 for the general proposal.

13 Let me turn to this question of
14 public engagement. And I think they're
15 absolutely right on target with the principles
16 laid forth. And clearly the mistake we made
17 in 1987 was jamming it down the throat of
18 Nevadans. And one might even hope they would
19 be interested in negotiating in the future on
20 one or more of these possible propositions.

21 And, indeed, there will be
22 political turnover there as throughout

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1 America, and so who knows.

2 But my point is I - we should
3 recognize that this has not been all for
4 naught for the last 25 years.

5 The Department of Energy used to
6 get an extremely bad rap. Well, I can tell
7 you when we went to Hanford, when we went to
8 South Carolina, when we went to WIPP, we heard
9 a different story.

10 Now, not everybody is happy with
11 everything, but what has happened either at
12 the initiative in the Department or because of
13 court suit or because of governor negotiations
14 in each of these places, there had been
15 procedures and processes and panels developed
16 as techniques to assure public oversight and
17 public engagement.

18 And I would urge us, and I think we
19 were about - we were doing this, I had
20 suggested this at a previous thing that in
21 this chapter or somewhere, we catalog those
22 real-world ways in which public engagement is

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1 occurring now at least as information for this
2 new entity or whomever has to do the siting.
3 There is no need to reinvent the wheel here.

4 But also recognizing while we have
5 general principles applicable everywhere, the
6 truth is different communities want different
7 ways of doing it. And they have different
8 governmental structures.

9 So, it isn't a one size necessarily
10 fits all. The principles do, but the
11 procedures - and we have experience in that.
12 Let's not lose it.

13 MEMBER LASH: Madam Chair, just a
14 brief response.

15 Your last point is a very important
16 point, and I pull up a quick anecdote.

17 In Sweden, we learned that the
18 president and chief operating officer of the
19 corporation went home by home in one of the
20 communities where they ultimately facilitated
21 the site, and sat at kitchen tables to listen
22 to people's concerns. And he learned in that

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1 process, the concerns were completely
2 different than they expected.

3 They were not about radiation
4 safety. They were about the fact that
5 thousands of workers would be brought in to
6 construct this facility and they might be from
7 other parts of Europe. And people were
8 concerned about the safety of their community.

9 Well, legitimate or not, they were
10 able then to understand the issues they had to
11 deal with, and began responding in a way that
12 was considered by the community to be real
13 instead of just a flow of propaganda.

14 MEMBER SHARP: I might add perhaps
15 you have another recommendation there that
16 utility CEOs ought to go door to door with
17 their customers -

18 (Laughter.)

19 MEMBER SHARP: -- to understand
20 what their needs are.

21 (Off-record comments.)

22 MEMBER BAILEY: All right. I have

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1 Commissioner Moniz, Commissioner Carnesale and
2 I think, Commissioner MacFarlane, did you have
3 another - Commissioner Moniz.

4 MEMBER MONIZ: I regret to say that
5 I have a number of points again, Madam
6 Chairman, but actually on - by the way, on
7 that last point of Jonathan's, these concerns
8 being surprising, I might just add that in a
9 very different context, the famous fracking
10 issue, for example, it turns out actually one
11 of the major concerns is simply all the heavy
12 truck movements that comes with that kind of
13 surface industry activity. So, it's a very
14 important point, I think.

15 Okay. So, a bunch of comments.
16 One is I would urge that as you complete the
17 report, that one goes from Recommendation 1
18 back to finding Number 0, which is to, you
19 know, based upon existing literature,
20 especially the Academy, to reinforce the
21 scientific underpinning of long-term
22 geological disposal.

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1 Because if you don't emphasize
2 that, the recommendations I think don't quite
3 have the appropriate weight.

4 I think in doing that, a second
5 issue comes up that I think we need to capture
6 maybe it's not in a recommendation, I don't
7 know, but that is that you say geological
8 disposal and mined repositories, dot, dot,
9 dot, and that's true, but I think we have to
10 emphasize that not every mined repository is
11 the same. They have different geochemistries
12 that relates to the fuel forms, et cetera, the
13 general idea that we need integrated decisions
14 and not separate decisions.

15 Now, I don't know if that works
16 into a recommendation, but I think it's a
17 very, very important issue which is ultimately
18 connected to the scientific underpinnings
19 there.

20 Dick mentioned the NRC and a
21 possible need to reevaluate kind of a
22 regulatory approach in a more responsive

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1 system. And I agree, but I would like to go
2 back to the NRC EPA separation.

3 And I don't know if we want to get
4 into this, but a reminder, the EPA regulations
5 for a repository are a jury-rigged bunch. And
6 I think we might consider at least the issue
7 of going back to that.

8 As you know, 10,000 years got
9 pieced onto a couple hundred thousand years
10 and, you know, the left leg is connected to
11 the right arm or something. I don't know.
12 So, that's another point.

13 I think another point that is
14 missing which is critical for disposal is the
15 need to completely redo our waste
16 classification scheme. It - this is a case
17 where there really are orphans already. And
18 there will be a lot more orphans running
19 around if we change fuel cycles.

20 We need to go to a risk-based
21 system, and I think that belongs here in the
22 disposal section. And I think should be some

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1 recommendation which will require statutory
2 actions eventually.

3 You mentioned in the first slide,
4 ethics. I'm all for ethics, but -

5 (Laughter.)

6 MEMBER MONIZ: -- only to a limit,
7 you know. We're dealing with nuclear waste,
8 after all.

9 But, no, the serious issue is that
10 we had, I thought, a very good presentation to
11 the Commission on intergenerational issues.
12 And what we don't want to do is to promulgate
13 the simple-minded view that intergenerational
14 responsibility means putting the waste into a
15 hole in your generation.

16 Now, it doesn't say that, but I
17 think it's an issue that we need to be very
18 careful in defining consistent with our
19 storage recommendations and with the idea of
20 providing options to other generations, in
21 fact.

22 Fifth, I think the - you mentioned,

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1 Jonathan, that we discussed this morning
2 briefly the idea that the new organization
3 needs responsibilities or authorities, rather,
4 beyond the access to the Waste Fund.

5 I agree. I think it needs to be -
6 I think it deserves a higher elevation. I
7 think you have two words, institutional means,
8 in 2B, which may be interpreted that way, but
9 I do think we need more of - I think it's
10 absolutely critical that we will not have a
11 meaningful organization if all they have is
12 access to the Waste Fund.

13 With regard to access to the Waste
14 Fund, Chairman Hamilton raised an issue about
15 congressional predatory instincts and
16 capabilities, and this is absolutely - oh, he
17 didn't? I thought he did.

18 Just as a note that I think there's
19 another analog today, actually, about the
20 value of having statutory language to kind of
21 protect something.

22 And that is, again, to the natural

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1 gas arena there's something called the Royalty
2 Trust Fund, which is a statutory assignment of
3 a small part of federal oil and gas royalties
4 to support research. It's in statute.

5 The Bush administration and the
6 Obama administration have both proposed
7 zeroing it out, save \$50 million a year. But,
8 frankly, the statutory language then allows
9 the supporters to much more easily protect it.

10 Now, it's still not bulletproof,
11 but I think if we had statutory language, it
12 could go a long way towards protecting it
13 particularly with Phil's caveat that the
14 organization has to perform.

15 In that context, you know, there's
16 a leitmotif through many of the discussions
17 about DOE performance with regard to spent
18 fuel management.

19 I think we have been remiss in
20 assigning - in sharing the credit with the
21 Congress for what has happened over the years.

22 And I think it's very important because,

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1 again, I think the fundamental error, we've
2 discussed this, is that it provided a
3 straightjacket for actions. And that's
4 exactly what we cannot afford for a well-
5 functioning system.

6 MEMBER SHARP: I think it's really
7 critical we nail that down. It's been said
8 several times this morning, but setting rigid
9 deadlines and designating one spot turned out
10 to have been not a shortcut.

11 MEMBER MONIZ: Right.

12 MEMBER SHARP: But ended up
13 jeopardizing us and putting the Department and
14 putting other players in a position where they
15 could not perform in a way that was expected
16 or at least we thought was the way we wanted
17 things to happen.

18 MEMBER MONIZ: And add to that the
19 financing games.

20 MEMBER SHARP: Oh, yes.

21 MEMBER MONIZ: Add to that even the
22 research restrictions on looking at

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1 alternatives. I mean, it was an absolute
2 narrowest set of options you could ever
3 construct within which one had no chance of
4 success.

5 MEMBER SHARP: If you don't mind,
6 Chairman, just a moment because it's not as if
7 everybody was stupid in making these
8 decisions, it may seem like it now, but the
9 fact is that it was driven by the sense that
10 we were not able to ever politically push the
11 noodle and get decisions made.

12 And so to help push not just the
13 bureaucracy, but the industry and everybody
14 else, that's why this was done as a technique
15 to try to get decisions made.

16 MEMBER MONIZ: Right.

17 MEMBER SHARP: Now, that didn't turn
18 out the work the way we wanted.

19 MEMBER MONIZ: Right.

20 MEMBER LASH: Madam Chair, could I
21 just - oh, are you finished, Ernie?

22 MEMBER MONIZ: No, but please go

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1 ahead. Do you want to go now? I have more.

2 MEMBER LASH: I have brief responses
3 to several of them, but please finish.

4 MEMBER MONIZ: Oh, well, then hold
5 your powder.

6 MEMBER LASH: Yes.

7 (Laughter.)

8 MEMBER MONIZ: Number 7, just as a
9 comment on Recommendation 4, I strongly
10 support this idea of a consent based, et
11 cetera, but we also have to acknowledge that
12 the political structures in the comparison
13 cases is a lot simpler than the one we're
14 talking about here and not sugarcoat it to
15 make it quite so easy.

16 MEMBER LASH: Right.

17 MEMBER MONIZ: Eighth, this is the
18 TRB recommendation. As I probably hinted
19 earlier, I am concerned about layer upon layer
20 upon layer both outside and inside the
21 Department at the moment.

22 But I just wonder the extent to

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1 which this was really considered especially in
2 the context of a new quasi-government
3 organization. And I would just at some point,
4 like to hear the analytical reasons why that
5 would be supportive.

6 And finally, Per raised the issue
7 of the boundaries of a defense waste
8 repository. I think that's - there are
9 reasons for wanting a clean definition similar
10 to WIPP, let's say. There are also good
11 reasons for what you raise in terms of other
12 waste and spent fuel particularly as it sits
13 on defense sites subject to the same arbitrary
14 dates that we have.

15 So, I think that's an open
16 discussion. And if the Committee would like a
17 kibitzer on that issue, I would be happy to
18 support.

19 Thank you.

20 MEMBER LASH: So, it will take me
21 not more than sixty seconds. I'm not going to
22 respond on geology, but I think your next-door

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1 neighbor may want to at some point, but there
2 certainly was no misunderstanding in the
3 subcommittee that all holes in the ground are
4 the same.

5 On EPA if I didn't state strongly
6 enough that we think that -

7 MEMBER MONIZ: Might I just say even
8 going back beyond that, I think we just need
9 to have a banner about the status of
10 scientific understanding.

11 MEMBER LASH: No, no. I completely
12 take your point. And most of the points you
13 made we will just take on board. They're very
14 good points.

15 I just didn't state as strongly as
16 I know the Committee - the subcommittee feels
17 about the need to go back to the EPA
18 regulations and concern about the million-year
19 standard and so forth.

20 On ethics, we did have - we do have
21 a good discussion of those issues in the
22 context of retrievability, but didn't apply it

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1 more broadly in the context of storage.

2 You're entirely right. I suspect
3 there's complete agreement with what you said.

4 We will try to better articulate the powers
5 that are necessary.

6 I think the report, the full draft
7 of the Committee report is pretty clear that
8 Congress shares the parentage of the problems.

9 But if not clear enough, we'll work on it.

10 MEMBER MONIZ: It's buried.

11 MEMBER LASH: It's buried. That's
12 correct. We will go back to the issue of the
13 Nuclear Waste Technical Review Board and
14 either be clearer or back away.

15 MEMBER BAILEY: Okay.

16 MEMBER MONIZ: And may I just repeat
17 I think this issue, I don't know if the
18 Committee addressed it, but the issue of the
19 need of a sensible waste classification
20 scheme.

21 MEMBER LASH: Oh, I'm sorry. I
22 skipped over that one.

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1 Apparently, your committee's draft,
2 the Reactor and Fuel Cycle Committee, will
3 have material on that rather than our
4 committee.

5 MEMBER BAILEY: All right. We're
6 going to move on to Commissioner Carnesale.

7 (Off-record comments.)

8 MEMBER CARNESALE: In the interest
9 of time and to differentiate myself from
10 Commissioner Moniz, I'm only going to do my
11 73rd point. And it relates to what you passed
12 over that you hadn't yet decided about the
13 question of the veto of the states.

14 I'd like to get a little
15 clarification. Looking at the Nevada
16 experience, I could understand where this
17 might have arisen. And I can understand with
18 regard to a disposal site.

19 But the transportation question is
20 one that raises itself, and I think of the
21 WIPP case that was just raised. Carlsbad
22 might have been happy, but you may not have

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1 somebody on this end if they can get the money
2 to build a rather substantial road to bypass
3 your equivalent of Santa Fe.

4 And I don't know what other
5 communities might be affected in that way.
6 And so, it seems to me that somehow other
7 communities that would be strongly
8 represented, that need to be represented that
9 might otherwise be represented by their state,
10 have to be represented somehow. And if not by
11 the state, then by whom?

12 MEMBER LASH: Your point is noted.

13 MEMBER BAILEY: All right.
14 Actually, Commissioner MacFarlane had an
15 additional comment.

16 MEMBER MacFARLANE: Yes, just a
17 quick response to Commissioner Meserve's
18 excellent point that it's going to be
19 difficult to continue the usual NRC type of
20 evaluation if you're doing this phased, staged
21 approach.

22 That's exactly right, and it's

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1 going to be difficult to do any kind of
2 quantitative - fully, entirely quantitative
3 assessment because you need to know all the
4 design features and everything ahead of time.

5 And you're not going to necessarily know that
6 if you do a staged approach, which makes a
7 strong argument for developing a safety case
8 instead of just relying on performance
9 assessment.

10 MEMBER BAILEY: Thank you,
11 Commissioner MacFarlane.

12 Commissioner Rowe.

13 MEMBER ROWE: I apologize for adding
14 what I'm afraid is merely whimsy, but I've
15 been sitting here in frustration over the
16 obvious relevance of Chairman Hamilton's
17 comments about the difficulty of binding one
18 Congress with another.

19 It seems to me that there ought to
20 be institutional vehicles whereby Congress
21 could put money it has collected from my
22 customers in a box and make it at least hard

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1 for individual appropriators to get back at
2 the box.

3 And it occurred to me that this
4 mission is not to talk about putting nuclear
5 waste into Yucca Mountain, but perhaps we
6 could put the money in Yucca Mountain.

7 (Laughter.)

8 MEMBER BAILEY: I think that's an
9 excellent note to end on.

10 All right. Commissioner Sharp.
11 That's the last one.

12 MEMBER SHARP: Just a reminder of a
13 lot of testimony that we got as it's critical
14 to have local input, we were reminded over and
15 over by a number of people we should state
16 clearly this is in the national interest, this
17 is a national problem in which the national
18 government must take a lead and which we must
19 find a solution.

20 And so, this is not to override
21 states and not to override local communities,
22 but this stuff has to transport through lots

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1 of geography now or at some point in the
2 future.

3 And so, we must not fail to state
4 the importance of this as a national
5 proposition in hopes of also appealing to the
6 general patriotism and understanding of people
7 which actually exists in many communities.

8 MEMBER BAILEY: Thank you, Jonathan.

9 Please extend our thanks to Chuck as well,
10 and we will look forward to your full report.

11 CHAIRMAN HAMILTON: Let me express
12 my appreciation to Vicky. I have asked her to
13 fill in here on very short notice, and I think
14 she's done an excellent job.

15 Vicky, we thank you very much for
16 that. And then we will take a five-minute
17 break and then go to Chairman Peterson.

18 For the public comment, there are
19 16 people on the list. They will be given
20 three minutes each. And then we will conclude
21 as several of you have emphasized to me, at
22 4:30.

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1 (Whereupon, the above-entitled
2 matter went off the record at 2:17 p.m. and
3 resumed at 2:23 p.m.)

4 MR. FRAZIER: Okay. If everybody
5 would come back in and take their seats, we
6 will get started posthaste.

7 Hey, Mary, look out there and see
8 if there are commissioners wandering around,
9 please.

10 MS. WOOLLEN: I'm sure there are.

11 MR. FRAZIER: I'm sure there are,
12 too.

13 CHAIRMAN HAMILTON: Jonathan will
14 not be here.

15 MR. FRAZIER: I see Jack and Betty
16 are back.

17 CHAIRMAN HAMILTON: May I ask the
18 commissioners to please take their seats and
19 we'll get underway?

20 (Off-record comments.)

21 CHAIRMAN HAMILTON: I think we can
22 go ahead. We'll turn now to Commissioners

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1 Domenici and Peterson for our final
2 presentation on the recommendations of the
3 Reactor and Fuel Cycle Technology
4 Subcommittee.

5 Per, I understand you will make the
6 presentation. Senator Domenici is not able to
7 be with us, but we thank him as well as you
8 for the work that you've done.

9 And you may proceed, sir.

10 MEMBER PETERSON: Thank you, Mr.
11 Chairman.

12 As you can see by our subcommittee
13 membership, we were fortunate to have a highly
14 qualified and prestigious group of people to
15 work on the important issues that we were
16 charged with.

17 Senator Domenici is my co-chair.
18 Our subcommittee also consists of Al
19 Carnesale, Susan Eisenhower, Allison
20 MacFarlane, Richard Meserve, Ernie Moniz and
21 Phil Sharp.

22 I really am saddened that - well,

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1 it's too bad that Senator Domenici has not
2 been able to join us today. He became ill and
3 was not able to travel - make the travel back
4 from New Mexico, and wish him a speedy
5 recovery.

6 I just want to say that it's been a
7 unique opportunity to be able to work with
8 him. And I think that he has a deep belief in
9 the capability of this nation to solve
10 problems.

11 And he has expressed that
12 consistently, and I'll try to do that as best
13 as I can here, too, and to represent the
14 things that he would also, I think, say. But,
15 again, I regret that he's not here to join in
16 with us.

17 This subcommittee was formed to
18 answer the call right here of the charter
19 specifically to evaluate existing fuel cycle
20 technologies and R&D programs in terms of
21 multiple criteria.

22 And our charter then goes on to say

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1 that the criteria of evaluation should include
2 cost, safety, resource utilization and
3 sustainability, and the promotion of nuclear
4 non-proliferation and counter-terrorism goals.

5 I'd also like to note that our
6 commission is clearly not comprised to be a
7 technology commission. Instead, we are
8 comprised to be a policy commission.

9 So, we're not making
10 recommendations for any specific reactor
11 technology or reprocessing technology or
12 anything of that nature.

13 Instead, we focus our efforts on a
14 policy framework under which these
15 technologies might, in the future, be
16 developed. And so that's the principal goal
17 that we have.

18 Now, additionally this commission's
19 focus on policies for managing the back end of
20 the fuel cycle. In addition to that, we have
21 also addressed closely related question of
22 whether any currently available reactor and

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1 fuel cycle technologies or any commercial
2 technologies that are now under development,
3 have the potential to change the fundamental
4 nature of the nuclear waste management
5 challenge that we confront over the next
6 several decades.

7 Given these key questions, we went
8 about our business in a combination of ways
9 holding public meetings and deliberative
10 meetings, and embarking on several site tours.

11 We held three public meetings to
12 hear from invited speakers and to receive
13 input from interested members of the public.
14 One in Idaho Falls, Idaho, and two in
15 Washington, D.C.

16 Our first meeting was held in Idaho
17 Falls where we heard from the Assistant
18 Secretary for Nuclear Energy, Pete Miller,
19 where he discussed the DOE's nuclear energy
20 R&D roadmap and several of the DOE's nuclear
21 R&D programs.

22 We also heard from EPRI regarding

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1 the status of nuclear R&D programs in the
2 private sector.

3 At our first meeting in Washington,
4 D.C., we covered a variety of topics from
5 commercial technology options for reactor and
6 fuel cycle technologies, to the role of local
7 communities and government should play in the
8 development and demonstration of new nuclear
9 technologies and their key safety,
10 environmental and security concerns.

11 We also covered issues with the
12 U.S. manufacturing sector and the labor
13 force's ability to support new reactor and
14 fuel cycle technologies.

15 Our last meeting in Washington,
16 D.C. focused on waste management implications
17 of fuel cycle technologies and the
18 international non-proliferation and security
19 implications of these fuel cycle choices. We
20 did have classified briefings on some of the
21 key topics there.

22 In total, we heard from more than

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1 fifty different witnesses. And all their
2 testimonies and presentations along with the
3 videos of the meetings, are posted on our BRC
4 website.

5 We also held three deliberative
6 meetings of the subcommittee, one was a
7 teleconference, and two in D.C., where our
8 members were able to voice their opinions and
9 concerns and debate the big issues at hand.

10 And I look at Ernie right now
11 because he has contributed consistently with
12 many helpful suggestions.

13 I think it's also a good point to
14 mention the what-we've-heard report that was
15 issued and the value of the feedback that we
16 have received from that.

17 And repeating back what we have
18 heard and then checking to see if it's largely
19 correct, is one of the fundamental things that
20 has improved nuclear plant safety because it
21 is a practice which now occurs routinely.

22 It's called three-way

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1 communication, and I think that it's important
2 that we've attempted to do it here as well.

3 Now, members of our subcommittee
4 also towards several nuclear sites of interest
5 and got to learn not just about the
6 facilities, but also about the people and the
7 communities that have been involved with them
8 for years as well.

9 Okay. The sites we visited
10 included Hanford, Savannah River, Idaho
11 National Laboratory and WIPP.

12 Members even visited fuel cycle
13 facilities and met with politicians, community
14 members, NGO representatives and government
15 representatives in France, Japan and Russia.

16 So, in the process of our work, we
17 came to two central conclusions that set the
18 context for the recommendations that I'll
19 present in a moment.

20 Our first central conclusion is
21 this: Advances in nuclear reactor and fuel
22 cycle technologies may hold promise for

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1 achieving substantial benefits in terms of
2 broadly held safety, economic, environmental
3 and energy security challenges.

4 To capture these benefits, the
5 United States should continue to pursue a
6 program of nuclear energy RD&D both to improve
7 the safety and performance of existing
8 technologies, and to develop new technologies
9 that could offer significant advantages in
10 terms of the multiple evaluation criteria
11 listed in our charter, those things that are
12 important to our society.

13 Our second -- if I can get - there
14 we go. That's good. Oops. Oh, boy.
15 Conclusion 2. There we go.

16 Our second central conclusion
17 actually can be phrased in a couple of
18 different ways. One way, the first, is that
19 no currently available or reasonably
20 foreseeable reactor and fuel cycle
21 technologies, including current or potential
22 reprocess or recycle technologies, have the

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1 potential to fundamentally alter the waste
2 management challenge this nation confronts
3 over at least the next several decades.

4 Second, put another way, we do not
5 believe that new technology developments in
6 the next three to four decades will change the
7 underlying need and requirement for an
8 integrated strategy that combines safe interim
9 storage of spent nuclear fuel with expeditious
10 progress towards siting and licensing a
11 permanent disposal facility.

12 There is no doubt we're going to
13 need a disposal facility regardless of what we
14 decide to do on the fuel cycle side. And this
15 is particularly true of defense high-level
16 waste and some forms of government-owned spent
17 fuel that can and should be prioritized for
18 direct disposal at an appropriate repository.

19 It is important to note that our
20 central conclusions stand independently of any
21 conclusion one might reach about the
22 desirability or feasibility of closing the

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1 nuclear fuel cycle in the United States. The
2 subcommittee simply could not reach a
3 consensus on this issue.

4 As a group, we concluded that it is
5 premature at this point for the United States
6 to commit irreversibly to any particular fuel
7 cycle as a matter of government policy, rather
8 there is a benefit of preserving and
9 developing new options.

10 RD&D should continue on a range of
11 reactor and fuel cycle technologies that have
12 the potential to deliver societal benefits at
13 different times in the future.

14 If and when technology advances
15 change the balance of market and policy
16 considerations to favor a shift away from the
17 once-through fuel cycle, that shift will be
18 driven by a combination of factors, including,
19 but hardly limited to, its waste management
20 impacts.

21 In fact, safety, economics and
22 energy security are likely to be more

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1 important drivers of future fuel cycle
2 decisions than waste management concerns per
3 se.

4 Given what we've just said about
5 our central conclusions, our subcommittee
6 makes the following recommendations:

7 The first one being that the U.S.
8 should provide stable long-term RD&D, that is
9 research, development and demonstration,
10 support for advance fuel - advance reactor and
11 fuel cycle technologies that have the
12 potential to offer substantial benefits
13 relative to currently available technologies
14 in terms of safety, cost, resource
15 utilization, sustainability, the promotion of
16 nuclear non-proliferation counter-terrorism
17 goals, and waste storage and disposal needs.

18 I should also mention that while
19 our recommendations are focused towards the
20 federal government, that industry also
21 performs a very important role in research and
22 that we should note that the Electric Power

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1 Research Institute, for example, also should
2 continue its efforts in supporting research on
3 these types of technologies.

4 We believe that a well-designed
5 federal RD&D program should be attentive to
6 the opportunities in two distinct areas. One
7 being on near-term improvements in the safety
8 and performance of existing Light Water
9 Reactor technology as a part of a once-through
10 fuel cycle, and in technologies available for
11 storing and disposing of spent nuclear fuel
12 and high-level waste.

13 The second being on the longer-term
14 efforts to advance potential game-changing
15 nuclear technologies and systems that could
16 achieve very large benefits across multiple
17 evaluation criteria compared to current
18 technologies and systems such as fast spectrum
19 reactors capable of continuous actinide
20 recycling and that use uranium more
21 efficiently, high-temperature reactors that
22 can supply process heat for hydrogen

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1 production or other purposes, small modular
2 reactors with novel designs for improved
3 safety characteristics, and the potential to
4 change the capital cost and financing
5 structure for new reactors as just a few
6 examples of several that merit effort.

7 Our second recommendation is one of
8 concurrence with the recommendation of the
9 President's Council of Advisors on Science and
10 Technology on the US energy R&D funding.

11 I note that Commissioner Moniz is
12 on the President's Council and has been deeply
13 involved in developing these specific
14 recommendations.

15 We agree about the need for better
16 coordination of energy policies and programs
17 across the federal government, for substantial
18 increase in federal support of energy-related
19 research, development, demonstration and
20 deployment, and for efforts to explore new
21 revenue options to provide this support.

22 Specifically, the recent PCAST

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1 report endorsed an earlier proposal by the
2 American Energy Innovation Council to provide
3 16 billion in annual federal support for
4 energy technology innovation. An increase of
5 10 billion per year over current funding
6 levels with all of that increase coming from
7 new revenue sources.

8 It is important to note that the
9 subcommittee is not making a specific
10 recommendation regarding the federal funding
11 levels -- regarding future federal funding
12 levels for nuclear energy RD&D.

13 And also I should again note that
14 the industry role in RD&D investment is also
15 very important and I would believe merits
16 increase as well.

17 Our third recommendation is a
18 portion of the federal nuclear energy RD&D
19 resources should be directed to the US Nuclear
20 Regulatory Commission, that is the NRC, to
21 accelerate development of regulatory
22 frameworks and supporting anticipatory

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1 research for novel complements of advance
2 nuclear energy systems.

3 We believe that an increased degree
4 of confidence that new systems can be
5 successfully licensed is important for
6 lowering the barriers to commercial
7 investment.

8 We recommend that this effort
9 receive five to ten percent of the total
10 federal funding for reactor and fuel cycle
11 technology RD&D.

12 While five to ten percent would
13 represent actually a relatively small fraction
14 of the total federal investment in nuclear
15 energy RD&D, it would amount to a large
16 increase in the amount of funding devoted to
17 developing an improved regulatory framework
18 for new nuclear energy technologies.

19 And if we look at things that have
20 been happening recently with small modular
21 reactors, the value of having a regulatory
22 framework in advance is very clear. And we

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1 think this should apply also to more advanced
2 technologies for reactors and fuel cycle.

3 Again, it is important to emphasize
4 that this funding would not come from licensee
5 fees, but be received as a portion of the
6 total federal RD&D funding for nuclear energy.

7 Our final recommendation is that
8 the United States should continue to take a
9 leadership role in international efforts to
10 address global non-proliferation concerns.

11 This could include, for example,
12 support for multi-national industrial scale
13 fuel cycle facilities, joint efforts with
14 other countries to improve security,
15 accountability technologies and protocols for
16 nuclear materials and capabilities, and
17 improvements in existing multilateral
18 agreement frameworks.

19 Our subcommittee also heard a
20 variety of views on whether and to what extent
21 U.S. fuel cycle decisions and policies have
22 influenced fuel cycle decisions made by other

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1 nations over the last several decades.

2 Whatever view one has about the
3 past, the subcommittee believes that it is
4 important for the United States to play a
5 leadership role in the technological and
6 diplomatic efforts overseas both by the U.S.
7 nuclear community's involvement in
8 international fuel cycle RD&D and
9 commercialization efforts, and through U.S.
10 participation in international non-
11 proliferation and nuclear security regimes and
12 initiatives.

13 Additionally, the subcommittee
14 recognizes the importance of continued
15 development of modern safeguards and security
16 technologies for application in existing
17 facilities and in combination with safeguards,
18 design approaches for new facilities.

19 That being said while our
20 subcommittee did focus on fuel cycle and
21 associated technologies, we clearly recognize
22 that the goals of non-proliferation in nuclear

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1 security cannot be achieved by primarily
2 technological means. Rather, success in this
3 area depends on the effectiveness of
4 diplomatic arrangements to strengthen the
5 current non-proliferation regime such as a
6 broader adoption of the International Atomic
7 Energy Agency's additional protocol, promoting
8 policies, technologies, and fuel cycle choices
9 that reduce proliferation risks, while also
10 taking steps to improve the security of
11 nuclear materials in facilities, and more
12 effective use of bilateral and nuclear
13 cooperation agreements.

14 These are the major recommendations
15 from the subcommittee. And I would, again,
16 like to thank all of the subcommittee members
17 who have participated constructively. And
18 more so, even, those members of the staff that
19 have provided tremendous support and worked in
20 developing the draft report material.

21 And finally to all of the members
22 of the public and the other stakeholders who

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1 provided an enormous amount of helpful input
2 to us. I'll open the floor.

3 CHAIRMAN HAMILTON: Thank you very
4 much, Per. An excellent report. I'll ask if
5 any of the subcommittee members have any
6 comments to supplement - Ernie.

7 MEMBER MONIZ: Yes, just a couple of
8 comments.

9 One is that just a - put an
10 exclamation point on what Per said in terms of
11 Recommendation Number 1 that this does
12 include, you know, research in terms of LWR
13 reactors, et cetera, and new fuel forms that -
14 I mean, the text will elaborate that. The
15 recommendation itself does not highlight it.
16 So, I think we just need to emphasize that.

17 And then in that context, I would
18 just add the one thing that, again, I think
19 the chairs should carry the burden is that I
20 think we do need to have a little
21 reexamination post Fukushima as to how the
22 portfolio might shift somewhat.

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1 CHAIRMAN HAMILTON: Okay. Thank
2 you. Any other subcommittee - Susan.

3 MEMBER PETERSON: I agree.

4 MEMBER EISENHOWER: Well, speaking
5 for myself here, I would just add one thing.
6 I have served on this committee, but I note
7 that U.S. leadership since this is a
8 commission on the United States' position,
9 tends to focus on continued leadership and
10 non-proliferation efforts.

11 I personally would like to speak up
12 for US leadership and innovation, and in the
13 research and development phase of this.

14 MEMBER PETERSON: Thank you, Susan.

15 I think that it's important - we
16 know that in many areas the US has slipped
17 behind other countries in terms of nuclear
18 energy technologies. But it's interesting to
19 note, for example, in the area of reactor
20 technologies, that the technology that is
21 emerging to be the most commercially
22 successful arguably of any, would be the

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1 passive safety technology.

2 And certainly in the post Fukushima
3 environment, we'd love to see plants that have
4 that type of capability to operate without
5 external source of power or heat sink.

6 This is a technology that emerged
7 out of the United States and arguably only the
8 US Nuclear Regulatory Commission could have
9 licensed this technology because of the fact
10 that it requires a high degree of scientific
11 technical capability to perform the
12 independent evaluation of that type of system.

13 And this is one of the reasons why
14 a principal recommendation from the
15 subcommittee is that we need to invest more
16 directly into NRC to develop that type of
17 capability further for these more advanced
18 technologies that we're looking at.

19 And that may be one of the things
20 that could contribute to reestablishing US
21 technical leadership in these areas.

22 CHAIRMAN HAMILTON: I see Dick, and

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1 then Ernie again.

2 Dick.

3 MEMBER MESERVE: Two quick points
4 that are really intended to just reinforce
5 some things that Per covered, but didn't
6 emphasize.

7 One is on his Recommendation 1,
8 which I think is the crucial one for this
9 report, he emphasized that one should be
10 thinking about these technologies in terms of
11 safety, security, economics, sustainability,
12 terrorism issues, waste storage.

13 That's all true and certainly I
14 concur in that. One thing that isn't
15 explicitly stated in the recommendation that I
16 think will be in the report, that it's
17 important to look beyond the isolated - in
18 making that evaluation, it's important to look
19 beyond an isolated segment.

20 As often we talk about reactors and
21 their benefits in one way or another in these
22 various dimensions, we need to think about

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1 them in an integrated system that the reactors
2 are not in isolation.

3 There's a whole fuel production
4 system. Maybe there's reprocessing.
5 Certainly disposal. That all has to work
6 together. And so, you need to look at
7 optimizing on these various characteristics
8 across the whole scope of the activities.

9 So, it's complicated. But if you
10 suboptimize, if you look at just one piece of
11 it, you're going to miss the whole picture and
12 maybe hurt yourself in terms of the other
13 components.

14 The second comment I'd make was on
15 the fourth recommendation is that it sort of
16 reinforced one point which was to look at this
17 in terms of the non-proliferation objectives
18 across the fuel cycle.

19 There's a lot of conversation about
20 efforts, important efforts, on dealing with
21 the proliferation of enrichment facilities
22 which - because of concern that the enrichment

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1 facilities if scattered around the world,
2 would themselves give you the access to at
3 least the technology that could be used for
4 producing weapons-usable material.

5 There is the same problem on the
6 back end of the fuel cycle with regard to
7 reprocessing facilities in that - because of
8 the separation of plutonium that could be used
9 for weapons.

10 And those two things are tied
11 together. And, in fact, there's advantages in
12 tying them together in that a country sees
13 that there's an integrated system where it
14 doesn't need to worry about fuel cycle,
15 therefore, is given some extra incentives to
16 not engage in them. And that does help in
17 achieving our non-proliferation objectives.

18 CHAIRMAN HAMILTON: Al.

19 MEMBER CARNESALE: I'm a member of
20 the subcommittee as well. I have a question
21 about Recommendation Number 2.

22 I agree in general, but it does

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1 strike me as one of these things is not like
2 the others.

3 This is a recommendation about
4 general investment in energy technologies, and
5 I don't - it's not that I can't see any
6 connection, but I don't understand why we
7 would be recommending more or less investment
8 in wind or solar or coal or anything else.

9 Why is it no specifically about
10 nuclear technologies?

11 MEMBER PETERSON: I think it harkens
12 to what Dick just observed that we should
13 think of this as being a system. The nuclear
14 part as being a system, but it's certainly not
15 a system that operates in isolation of all
16 other energy sources.

17 So, in some sense, I think that one
18 of the reasons why the subcommittee has not
19 really coalesced around a specific
20 recommendation for nuclear RD&D is that it
21 makes sense probably to view nuclear energy in
22 the larger context of other energy sources and

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1 their environmental problems, sustainability
2 problems and safety problems as well.

3 I certainly personally feel that
4 it's a good thing to do, but I think your
5 point is important in that it merits
6 additional work and consideration as we work
7 towards the final draft.

8 CHAIRMAN HAMILTON: Any further
9 comments?

10 Yes, Ernie.

11 MEMBER MONIZ: Yes, two. One is -
12 and actually may fit into this last exchange
13 is -- in some way, but especially in the
14 context of the DOE leitmotif of the day, I
15 think we should emphasize that it's not in the
16 recommendations, but I think the subcommittee
17 as a whole felt that the 2009, I guess it was,
18 DOE technology roadmap was - while it may lack
19 some implementation details, was a step in the
20 right direction. And it really brought in the
21 agenda to be much more strategically aligned,
22 including things like LWR work, waste-form

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1 work, all the things that, frankly, had been
2 missing for quite some time in the program.
3 And I think that the subcommittee was uniform
4 in that.

5 The second point I would make is
6 going back to this proliferation discussion, I
7 think there's, frankly, a bit of a gap overall
8 in terms of how the Commission as a whole can
9 discuss some of the institutional and policy
10 issues of proliferation more broadly since,
11 again, we - this subcommittee was more on the
12 technology side.

13 We heard a presentation at one of
14 our meetings from the Department of State I
15 found rather unsatisfactory with rather a set
16 of ad hoc actions that do not add up to a
17 policy. And I do think that does impact our
18 charge.

19 And so, I don't know what the
20 solution is, Mr. Chairman. A little rump
21 group or something, but I do think we need
22 somehow to grapple with these broader issues

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1 of proliferation.

2 MEMBER MacFARLANE: Yes, I would
3 second that.

4 CHAIRMAN HAMILTON: Thank you.
5 Anything further?

6 (No response.)

7 CHAIRMAN HAMILTON: Per, I think
8 you got off a little easy, myself. It was a
9 very, very good report.

10 We thank you, and please extend our
11 thanks to Senator Domenici as well.

12 MEMBER MONIZ: Mr. Chairman, I think
13 it's because nobody told him that he was
14 supposed to have seven recommendations.

15 (Laughter.)

16 CHAIRMAN HAMILTON: Okay. Thank
17 you, Per. That completes our formal agenda.
18 We'll turn now to the public comment.

19 Before we do, I want to remind
20 everything that the recommendations that have
21 been discussed here this afternoon and this
22 morning may or may not be adopted by the full

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1 commissions.

2 And we will now integrate the work
3 of the subcommittees and the views expressed
4 here today into a draft report for public
5 release at the end of July.

6 We will now turn to public comment.

7 We're very pleased that we have sixteen
8 persons who have indicated they want to make a
9 statement to the Committee.

10 The first one will be Robin Read,
11 NFWL. And I'll ask her or him, is it? I'm
12 not sure.

13 ROBIN READ: Shall I do it from
14 here?

15 CHAIRMAN HAMILTON: Yes, would you
16 do it from the podium?

17 ROBIN READ: Yes, sir.

18 CHAIRMAN HAMILTON: We can hear it a
19 little better, I think, if you do it from the
20 podium and it's connected to the video.

21 And she will be followed by Tom
22 Cochran of the NRDC. Please proceed. You

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1 have three minutes.

2 Now, may I emphasize to you that we
3 will be keeping a clock on you here? And when
4 the yellow comes on, they have how much time
5 left? When the yellow comes on here, you have
6 one minute left. And when the red comes on,
7 your time is expired.

8 ROBIN READ: I'll be very careful
9 about my time, for goodness sakes.

10 CHAIRMAN HAMILTON: Okay. Thank
11 you.

12 ROBIN READ: Good afternoon,
13 everyone. I'm Robin Read, president and CEO
14 of the National Foundation for Women
15 Legislators, now a 73-year-old organization of
16 over 2,000 elected women officials.

17 I'm delighted to be here. Our
18 energy and natural resources and agricultural
19 policy committee last year passed a resolution
20 that I'd like to share with as many of you as
21 are interested.

22 We did mention the fact that the

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1 current administration is committed to
2 restarting America's nuclear power industry
3 although they terminated Yucca Mountain
4 Repository project, but we did want to - we
5 were very pleased about the Blue Ribbon
6 Commission, of course.

7 And we wanted to provide
8 recommendations for safe, long-term policies
9 and programs for managing the nation's
10 commercial and defense use of nuclear fuel and
11 high-level radioactive materials.

12 We support the nuclear power and
13 are based on sound scientific and technical
14 analysis.

15 We support innovative technology
16 that will enable the United States to once
17 again lead the work in these technologies.

18 We did send our resolution to the
19 President of the United States, and I did have
20 a response from him about that.

21 The Secretary of US Department of
22 Energy, members of the Blue Ribbon Commission,

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1 and all the leadership in congress, I do want
2 you to know that within 12 hours of the Gulf
3 Oil Spill I had 72 calls from among our fifty
4 states, of women who wanted to be on the Blue
5 Ribbon - our own Blue Ribbon Task Force to
6 work on energy policy.

7 We feel that this is very, very
8 important for all of our states. And whereas
9 many of you think that perhaps some of our
10 women are not as supportive in nuclear energy,
11 I beg to differ with you.

12 Perhaps you can look at our
13 resolution, and you'll understand how
14 supportive we are.

15 I hope this will be helpful to some
16 of you in your - as you'd like to report out
17 about how women of the United States, women
18 leaders of the United States feel about
19 nuclear power.

20 I leave this with you. I think I
21 was under my three minutes, right? I did try
22 to hurry, but is there anyone that would like

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1 a copy of our resolution for their own uses?

2 CHAIRMAN HAMILTON: Yes. Thank you
3 very much. We will indeed take the
4 resolution.

5 ROBIN READ: I do want to say many
6 of you know that Ann Rydalch, State
7 Representative Ann Rydalch from Idaho chose
8 our commission. Many of you may know her as
9 well. She's been very involved in energy
10 policy. Thank you.

11 CHAIRMAN HAMILTON: Thank you very
12 much. The next speaker will be Tom Cochran.

13 TOM COCHRAN: Mr. Chairman and
14 commissioners, your three-minute time limit
15 prevents me from telling you what I like about
16 your findings.

17 (Laughter.)

18 TOM COCHRAN: So, I'll tell you what
19 my problems are.

20 The Fukushima accident raises more
21 than a dozen serious concerns about
22 operational reactors and their safety and the

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1 management of spent nuclear fuel.

2 You were asked by the President to
3 address how the nation should manage and
4 dispose of spent fuel.

5 You've ducked several of our
6 recommendations and rejected one. And as I
7 understand it, this is primarily on the basis
8 that you claim to be a policy committee and
9 not a technical committee.

10 Thus you, in your familiar to
11 address these technical issues, you have
12 essentially left it to the Nuclear Regulatory
13 Commission to resolve these issues such as how
14 fast we should move spent fuel out of pools
15 and into dry cask storage, whether you should
16 have hardened dry cask storage or not, whether
17 you should move spent fuel from operational
18 reactor sites to consolidated interim storage.

19 Contrary to at least some of you, I
20 have no confidence in the Nuclear Regulatory
21 Commission's ability to review its past
22 practices with respect to the lessons learned

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1 from Fukushima. And I could go into some
2 detail about that, but not in three minutes.

3 Therefore, I'm asking you as a
4 committee to call upon the President, to write
5 the President and ask him to establish a
6 Technical Review Committee to review the
7 lessons learned from Fukushima independent of
8 the NRC staff and commission review.

9 I support the Commission's review,
10 the NRC staff's review, but you cannot expect
11 them to review their past practices and come
12 up with the best recommendations for this
13 country.

14 And I think in particular with
15 regard to spent fuel management, the Waste
16 Confidence Rule gets in the way it's used by
17 the NRC and Licensing Board to prevent the
18 public from raising issues related to spent
19 fuel management and licensing of existing and
20 new reactors. Thank you.

21 CHAIRMAN HAMILTON: Thank you very
22 much, Tom Cochran.

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1 Dan Brown will follow - excuse me.
2 Ernie.

3 MEMBER MONIZ: May I ask a
4 questions?

5 Tom, on this question of reviews,
6 there have been in congress a number of calls
7 for other kinds of reviews including, like,
8 for example, National Academy.

9 Can you comment on that vis-a-vis
10 your own proposal you just made?

11 TOM COCHRAN: Well, I think the
12 Academy would be useful if that's all - if
13 that's the only option.

14 We've asked for a commission along
15 the lines of the Kemeny Commission. As you
16 recall after Three Mile Island, there were two
17 independent reviews established, both the
18 Kemeny Commission and a review by the
19 congressional staff. And I think both of
20 those served a very useful service.

21 And I think the nation would be
22 better served if we followed that example with

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1 respect to Fukushima.

2 I'd simply point out we had three
3 core melts at Fukushima. And there are 23
4 reactors in the United States that are of
5 similar design. Eight others have a Mark 2
6 instead of a Mark 1 containment. So, thirty
7 percent of our fleet is similar to these
8 Japanese reactors.

9 This was a serious problem, and it
10 deserves serious national attention. And if
11 you're going to duck the technical issues, we
12 need a Technical Review Committee independent
13 of the NRC to review these lessons learned.

14 We're not going to get the service
15 we need from this commission or the staff
16 alone.

17 MEMBER MONIZ: Any other comment on
18 EPA rulemaking?

19 TOM COCHRAN: Well, we've had this
20 discussion on siting repositories. I would
21 urge that as part of your recommendations,
22 that the licensing criteria for the repository

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1 has to come before the selection of the sites.

2 Otherwise as we saw in the past
3 with respect to Yucca Mountain, the agencies
4 that are concerned, EPA, DOE, OMB, Justice go
5 into the back room and they massage the
6 criteria to -

7 MEMBER MacFARLANE: Tom, we actually
8 say that in the report.

9 TOM COCHRAN: Okay.

10 CHAIRMAN HAMILTON: Thank you very
11 much, Mr. Cochran.

12 Dan Brown is the next speaker.

13 DAN BROWN: Good afternoon, ladies
14 and gentlemen. I'm going to blow through this
15 as quick as I can.

16 In your second meeting last year,
17 this commission was originally empaneled as to
18 deal with US nuclear, US-used fuel.

19 And in your second meeting, I made
20 some brief comments and I said we really
21 should look at the global issue, because
22 global events affect America. And I think

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1 Fukushima has amply proven that was wise.

2 It's affecting our environment.
3 Shortly after the incident at Fukushima,
4 people were reporting low levels of
5 radioactivity detected on the west coast.

6 It's affected our industry. The
7 popularity - the public opinion in the United
8 States dropped. When there had been something
9 like seventy percent support for more nuclear
10 power, it dropped 25, 30, 35 points within two
11 weeks.

12 And the nuclear industry had been
13 working for years to build up that confidence,
14 and it just went "poof" like that.

15 We have to deal with climate
16 change. We need a relative value of how much
17 conventional sources of energy are costing us
18 and the risk that they entail compared to
19 nuclear power.

20 And, for instance, the ash spill
21 down in Tennessee, there's more radioactivity
22 in that ash spill than there would be in a

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1 nuclear accident.

2 We got - Abu Dhabi is developing
3 new reactors now built by South Korea. And
4 there's no plant that I know of to dispose of
5 the spent fuel. And that could be a problem
6 for us here in the United States.

7 And more than anything else, the
8 public opinion issue is driving silly
9 decisions like the German government deciding
10 to shut down their whole nuclear industry.

11 I doubt if they're going to get hit
12 by tsunamis or 9.0 earthquakes in Berlin. So,
13 it was a political decision not based on
14 science.

15 And most of the opposition in the
16 United States has been, over the years, has
17 been based on public opinion more than
18 scientific validity.

19 Somebody mentioned earlier that,
20 you know, with Siting Commission, you have to
21 have an approval from the local community.

22 It's not just a matter of the local

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1 community, you know. Fukushima is affecting
2 us here.

3 Yucca Mountain, there was more
4 opposition from people that didn't want the
5 stuff shipped through Chicago or St. Louis or
6 Omaha on the way to Yucca Mountain. There as
7 more opposition from the transport question
8 than there was from the people of Nevada.

9 Bruce Power in Canada attempted to
10 ship parts of a decommissioned reactor through
11 the Great Lakes and the St. Lawrence Seaway
12 over to Sweden a few months ago. And they
13 didn't notify and get the approval of
14 intermediate communities. And the result was
15 that those communities went berserk when they
16 heard about it. And every newspaper, every
17 reporter in Canada put it on headlines that,
18 you know, nuclear waste shipped through St.
19 Lawrence Seaway and Great Lakes.

20 And then the media went out and
21 interviewed people that knew nothing about the
22 issues, all of whom were anti-nuclear. And

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1 I've talked to people in the industry in the
2 states here that were really angry at Canada.

3 On the question of revenue, of
4 funding, I'm not sure the funding really
5 exists. The fund has - the money has been put
6 into the general fund, and I don't think it's
7 readily available. We should try and find a
8 way to pay for used fuel through future
9 revenue.

10 I don't think after Fukushima, I
11 don't think the American people will approve
12 any waste facility or interim facility
13 anywhere in Canada - in the United States,
14 rather. We need a pragmatic solution that the
15 public will support.

16 Okay. That's it. Thank you very
17 much.

18 CHAIRMAN HAMILTON: Thank you very
19 much, Mr. Brown.

20 Next will be Judy Treichel, and she
21 will be followed by Mr. Markhijani.

22 JUDY TREICHEL: My name is Judy

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1 Treichel. I'm from the Nevada Nuclear Waste
2 Task Force.

3 I'm concerned that when you had
4 your reports about Fukushima, that they were
5 sort of downplayed with what's going on.

6 I know that the news has sort of
7 dropped the issue, but I disagree with Mr.
8 Kokajko that there was increasing and growing
9 stability. I don't think there is.

10 And one of the questions that I
11 wished that you had asked or that I would like
12 you to take up is, why the release standards
13 or the allowable doses have been raised to the
14 point where schoolchildren can receive the
15 same or greater dose as a nuclear worker.

16 I think this is going to lead to
17 huge problems in the future. And I think it's
18 one of the things that you need to look at
19 because it certainly does show that the
20 problem is a very, very large one.

21 I also don't think that we should
22 be referring to this as an accident. It may

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1 be in this case, but certainly nothing after
2 this case.

3 As Tom Cochran noted, we have the
4 same kind of reactor here. We have the same
5 sorts of problems here. There are problems
6 that have been pointed out for a long, long
7 time and nothing was done about them.

8 So, if something happens in the
9 future, it's not an accident. It's that we
10 weren't careful enough and we didn't do what
11 we should have done before that accident
12 occurred.

13 And I guess as a final point, we'd
14 be more than happy to take all the money in
15 Yucca Mountain, but we do require that every
16 truck coming in be examined very carefully.
17 Thank you.

18 (Laughter.)

19 CHAIRMAN HAMILTON: Thank you very
20 much.

21 Mr. Markhijani, and he will be
22 followed by Mr. John Parry, Jr.

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1 ARJUN MAKHIJANI: thank you very
2 much, Mr. Chairman.

3 I'm Arjun Makhijani, president of
4 the Institute for Energy and Environmental
5 Research.

6 I must say you could have a little
7 better served by your briefings about
8 Fukushima. I was a little bit shocked to hear
9 that the NRC did not know how much spent fuel
10 there as at Fukushima and couldn't give you a
11 relative assessment of what there is here.
12 So, let me give you a little vignette, anyway.

13 This information is public by the
14 Japan Atomic Industrial Forum since March.
15 Roughly 50 tons in Unit 1. Roughly 90 tons in
16 Unit 2 or 3, hundred tons - I got Unit 2 and 3
17 mixed up. 240 metric tons including the core,
18 in Unit 4.

19 When you add all those up, it is
20 less than in the spent fuel pool of Vermont
21 Yankee alone, which was re-licensed without
22 requiring dry storage, in the middle of this

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1 crisis.

2 I think the NRC is doing a shocking
3 job. And I think their response to your
4 questions about dry storage - well, since I
5 can't think of any kind, polite ways to say
6 it, I won't.

7 I think the public is not being
8 well served. There are many obvious lessons
9 that could have been learned on Day 3.

10 I issued a spent fuel pool warning
11 on the 15th of March or the 14th of March, I
12 think, before TEPCO. There are lots of
13 lessons to be learned.

14 One among them that is obvious,
15 that about one out of every hundred Light
16 Water Reactors that have ever been built, has
17 now suffered core damage.

18 That's a shocking number. And I
19 think you ought to take into account before
20 you recommend that we ought to continue making
21 plutonium just to boil water, because that's
22 what we're doing.

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1 All right. I was disappointed that
2 documents were not public before this. So, we
3 couldn't read your reports and comment on
4 them, and had to rely on slides and impromptu
5 especially as we are restricted to three
6 minutes.

7 I was happy to see - let me say
8 something positive. I was happy to see that
9 waste classification is proposed to be
10 revised. I do agree. As a Hindu, I can tell
11 you I'm well qualified to say we don't have a
12 classification system, but we have a cask
13 system for waste according to origin.

14 (Laughter.)

15 ARJUN MAKHIJANI: So, I'm glad that
16 it is proposed to be revised.

17 I am not confident that performance
18 standards will be properly implemented.

19 Performance standards are very
20 flexible. In regard to depleted uranium, the
21 NRC staff did a performance assessment in
22 which they said there would be no erosion at

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1 an unspecific generic site for one million
2 years.

3 And then during the public
4 discussion of which a transcript is available,
5 the author of this report essentially said it
6 was silly to do that.

7 And the NRC's own expert also said
8 it was silly. And then we all agreed that
9 "silly" wasn't an appropriate regulatory term,
10 or something equivalent to silly. I can't
11 remember the exact word.

12 I can tell you that in the
13 licensing technical document for the Utah
14 Energy Solutions waste site, there is a number
15 that says that Utah can dispose of more
16 uranium than the weight of the earth per gram
17 of Utah soil.

18 I testify to this under oath in
19 2004 at the same time as the government, NRC,
20 and the company said, the licensed applicant,
21 said that it was a scientifically sound
22 report. And to date, it has not been

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1 corrected, nor have I been corrected.

2 I believe nuclear engineers are on
3 the site. You can see how many kilograms ten
4 to the 37 picocuries is and arrive at the same
5 conclusion of uranium 238.

6 CHAIRMAN HAMILTON: Your time is
7 expired Mr. Makhijani.

8 ARJUN MAKHIJANI: I think I have
9 zero confidence in the ability of the
10 establishment to do sensible performance
11 standards given that for seven years they have
12 not changed a document that says we can
13 dispose of more uranium than the weight of the
14 earth per gram of Utah soil.

15 CHAIRMAN HAMILTON: Thank you very
16 much, Mr. Makhijani.

17 I understand Mr. Parry is not here.
18 Call to the microphone Katherine Fuchs. And
19 she will be followed by Geoff Fettus.

20 KATHERINE FUCHS: Hello. First, I
21 just want to thank the Commission for the
22 concern they've shown over the incidents at

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1 Fukushima. I'm heartened to hear that a lot
2 of these recommendations are going to be
3 further investigated in light of what's
4 happening in Japan. And I wish that I got
5 that same feeling from the NRC.

6 So, I am representing the Alliance
7 for Nuclear Accountability, which is an
8 organization of 36 groups around the country
9 who live downwind and downstream of weapons
10 production facilities, waste storage sites and
11 reactors.

12 I cannot claim to represent
13 everyone in the communities affected by
14 nuclear waste and spent fuel, but we do have a
15 very diverse coalition, geographically
16 diverse, economically diverse and different
17 backgrounds.

18 And they all function on a
19 consensus process and have decided that
20 hardened onsite cask storage is really the way
21 to go until we find a solution for disposal.

22 I just wanted to reiterate why we

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1 see this as the way to go. First, there is
2 the realities of consolidated interim storage.

3 Is it fair? I'm not sure that it
4 can be because if waste is being produced all
5 over the country, brought to one location, is
6 it really the responsibility of that one
7 community to accept the waste created
8 elsewhere?

9 We don't think it is. We think
10 that the communities that create the waste
11 have a responsibility to deal with it.

12 Additionally, I'm not sure how it's
13 politically possible to get a community to
14 take interim waste when there's not a plan for
15 a permanent solution.

16 We, you know, I know that we're
17 just trying to put a way forward and not
18 specific details, this isn't a siting
19 commission, but this is a reality that we're
20 going to continue to run into.

21 So, perhaps the permanent disposal
22 and interim storage really do need to be

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1 looked at together.

2 Finally, I just wanted to mention
3 the cost of transporting waste. Earlier
4 someone mentioned that we can look at the
5 European model and how safe they've been able
6 to transport waste.

7 I think that's great that they
8 haven't had an accident, but I would like to
9 point out that the European railroad system is
10 much more advanced than the United States
11 railroad system.

12 There's never been a single
13 fatality in all of France's railroad
14 operations. We may not have the same record.

15 So, there will be a lot of investment
16 required for transportation if we decided to
17 go with interim consolidated storage.

18 CHAIRMAN HAMILTON: Thank you very
19 much, Ms. Fuchs.

20 The next speaker is Geoff Fettus.
21 He will be followed by Kara Colton.

22 GEOFF FETTUS: Thank you for having

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1 me. I've set my stopwatch so I can stay under
2 the three minutes, and also see if I can have
3 time to say something more supportive like my
4 boss, Tom Cochran.

5 Commissioner Lash stated that his
6 subcommittee coalesced around the four basic
7 concepts, need for disposal, a geologic
8 repository with a new process and a new
9 entity. That, I am supportive of, and as is
10 NRDC.

11 However, Commissioner Rowe also
12 noted that shortcuts are what's gotten the
13 process into trouble. And we might express it
14 a bit more bluntly, but we also agree with
15 that.

16 Let me suggest a key and specific
17 recommendation that must be in your July
18 report, and certainly in any final report. If
19 you want to achieve what you've set out to
20 achieve, which is a transparent, workable
21 process that arrives at siting and development
22 of a geologic repository, which importantly

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1 isn't just a geologic repository by fiat, but
2 engenders public trust in confidence, amend
3 the Atomic Energy Act to no longer treat
4 radioactivity as a privileged pollutant.

5 Specifically, I'm talking about the
6 exemptions of radioactivity from our clean
7 water and hazardous waste laws.

8 As several of you have noted in
9 your questions today throughout the process,
10 the current situation is not working and not
11 just in terms of funding, although that's its
12 own discussion, even more importantly in terms
13 of authority and process.

14 And Commissioner Lash specifically
15 noted that the subcommittee struggled with the
16 idea of how it defines meaningful oversight
17 for states in our federal system to protect
18 public health, but also to avoid what he
19 termed, and I wrote this down, constant
20 interference with whatever new entity is
21 created.

22 And I don't really know what that

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1 meant, but, you know, we only have three
2 minutes.

3 You can suggest new methods or
4 ideas on public engagement all you want. And
5 while it's welcome and we certainly will
6 appreciate it, any consulting process that
7 states have in what you suggest in going
8 forward is going to remain, at best, the half
9 a loaf or, really, I would suggest, a quarter
10 of a loaf that what Nevada had and what they
11 ran into trouble with.

12 Until such time as states can set
13 cleanup and other protective standards for
14 water, land and air that they can enforce via
15 RCRA, the Research, Conservation and Recovery
16 Act, or the Clean Water Act with the attendant
17 citizen supervisions, you won't get that
18 public trust and buy-in.

19 Let me be clear I'm not suggesting
20 a state would be the licensing regulator of a
21 geologic repository, or the EPA would not be
22 setting radiation protection standards,

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1 because I agree with that basic division of
2 resources.

3 Rather, once there is - rather, I'm
4 suggesting the states can actually say, for
5 example, there is a disaster along a
6 transportation line or in an operating nuclear
7 facility or at, God forbid, a proposed nuclear
8 facility.

9 Until such time as those states can
10 actually set cleanup standards and regulate
11 them, you will never get the buy-in until they
12 can regulate such releases are and will never
13 know what the bargain is.

14 So, in conclusion, unless and until
15 you recommend that congress do away with these
16 anachronistic exemptions, you're not going to
17 get the public trust that you're looking for.

18 Thank you.

19 CHAIRMAN HAMILTON: Thank you very
20 much, Mr. Fettus.

21 Ms. Colton, and she will be
22 followed by Michele Boyd.

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1 MS. COLTON: Hi, my name is Kara
2 Colton from the Energy Communities Alliance.
3 ECA is the organization of local governments
4 that are adjacent to or impacted by DOE
5 activities.

6 Many of our members are some of the
7 communities that have expressed an interest in
8 hosting future nuclear facilities.

9 Thank you for the opportunity.
10 It's been great today to hear words like
11 inclusive, transparent, open, consent based,
12 negotiate, clear rules that there's an
13 interest in defining "interim" and what that
14 means, and that there was a recommendation to
15 take the time and provide resources to ensure
16 that the concerns of the communities are heard
17 from the communities directly from themselves
18 rather than just assumed.

19 I want to speak to you very briefly
20 and submit for the record a letter that ECA
21 submitted earlier this month to Secretary Chu.

22 We asked that DOE review the safety

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1 and security of defense-related high-level
2 waste and spent fuel storage in light of what
3 happened in Japan and as the NRC reviews
4 domestic nuclear power facilities and spent
5 fuel storage practices.

6 More specifically, we've asked
7 Secretary Chu to review the impacts on local
8 communities of long-term storage of defense-
9 related spent fuel and high-level waste, and
10 to analyze the cost and impact of cleanup
11 budgets on storing and securing this waste at
12 DOE sites.

13 In order to ensure the health and
14 safety of local communities, the safety and
15 security issues must be reviewed not only
16 because of what happened in Japan, but
17 regularly.

18 The findings should be reported
19 publicly. This would be helpful to build
20 trust amongst DOE, local communities and with
21 the public.

22 In regards to the impact of cleanup

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1 budgets at DOE sites, ECA is concerned that
2 cleanup funding is being used to store and
3 secure the defense-related high-level waste
4 and spent fuel. This could prevent essential
5 cleanup activities from being completed.

6 Funds used to manage high-level
7 waste at DOE sites were cut in 2011, and may
8 be cut further in 2012.

9 The costs associated with storing
10 and securing waste can be significant and may
11 well grow, and they're coming out of the
12 cleanup budget.

13 To ensure future storage needs are
14 met while these issues are being discussed,
15 the disposal issues, new facilities are likely
16 to - need to be built. For example, storage
17 facilities at Savannah River site and Hanford
18 to store the vitrified waste that was
19 originally destined for Yucca Mountain.
20 Securing these new facilities are going to add
21 an additional cost.

22 Another example of the impact of

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1 budget cuts after WIPP's budget was recently
2 cut, the Carlsbad City Council voted
3 unanimately in an emergency session, to return
4 3.5 million in DOE infrastructure funds in
5 order to help protect about eighty jobs at
6 WIPP.

7 This leads to another ECA
8 recommendation, and that's that the
9 administration consider - I'm sorry, excuse me
10 - begin the dialog with communities now on
11 developing interim storage especially while we
12 have, and before we may lose, experienced
13 workers due to these budget constraints.

14 Thank you, and I'll submit the
15 letter.

16 CHAIRMAN HAMILTON: Thank you very
17 much.

18 Ernie.

19 MEMBER MONIZ: A question because
20 I'm not sure I understood something at the
21 beginning of your remarks.

22 Did you say your organization

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1 includes a number of communities interested in
2 hosting sits?

3 MS. COLTON: That may be understood
4 in hosting future facilities, yes.

5 MEMBER MONIZ: Can you name them?

6 (Laughter.)

7 MS. COLTON: I could name them. I'm
8 not sure I should name them. But, I mean,
9 Carlsbad is one of our members, for example,
10 that has expressed interest in possibly
11 hosting future sites. Thank you.

12 CHAIRMAN HAMILTON: The letter you
13 referred to will be part of the record.

14 Michele Boyd is next, and she'll be
15 followed by Michael McLay. Thank you.

16 MS. BOYD: My name is Michele Boyd.

17 I'm with Positions for Social Responsibility,
18 and I presented to you in your very first
19 meeting the very first day that you all met.

20 And what I presented was the
21 principles for safeguarding nuclear waste at
22 reactor sites. And I'm highly disappointed to

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1 not see any reference of this in your summary
2 of what you've learned from all the public
3 input.

4 This document calls for
5 safeguarding the waste, hardening the waste at
6 the waste sites. It's signed by a hundred -
7 over 170 organizations from all fifty states.

8 This is what the communities that
9 live near these sites want. They do not -
10 they do not - let me repeat. They do not want
11 to move the waste to some - willy-nilly to
12 some interim storage site.

13 There is disagreement. There isn't
14 agreement about permanent disposal and how we
15 go about doing that. And I think that's a
16 really important piece that your commission is
17 looking at.

18 But to try to claim that the lesson
19 from Fukushima is let's move this stuff faster
20 than ever, is completely missing the point.

21 It took nine years from the time
22 that the agreement for PFS was signed by the

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1 leader of the Goshute Tribe, to the time that
2 the NRC gave the license. Nine years.

3 Are we going to wait nine years to
4 deal with the lessons of Fukushima which is
5 that over-packed pools are dangerous?

6 That lesson we know. We don't need
7 to wait for a final NRC 90-day review to know
8 that that is a serious problem.

9 And so what the communities around
10 these sites want, is for this waste to be
11 dealt with. We want the security threats to
12 be dealt with now.

13 And that should be your number one,
14 absolute, your number one recommendation. And
15 we're very disappointed to see that it's been
16 completely glossed over.

17 And then earlier this year we sent
18 a letter and we presented to you on February
19 2nd with another seventy subgroups laying out
20 the reasons why we oppose interim storage.

21 If you continue down this path, you
22 will have a lot of community groups fighting

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1 you tooth and nail every step of the way.

2 If you go down the path of saying,
3 okay, let's deal with the real security
4 threats and let's involve the public in that
5 process, you will have more cooperation.

6 Thank you very much.

7 CHAIRMAN HAMILTON: Thank you very
8 much, Michele Boyd. And now, Michael McLay.

9 MR. McLAY: I'd like to call the
10 attention of the Committee to the report from
11 Oak Ridge National Laboratories on molten salt
12 reactors, history status and potential, that
13 was published in 1969.

14 If you read the last concluding
15 paragraphs of the intro of this report, it
16 basically talks about how the molten salt
17 reactor technology could be configured as
18 either a converter or a breeder, which means
19 that you could use it to actually burn nuclear
20 waste, turn it into something other than -
21 something less toxic and has a shorter half-
22 life much more easily disposed of, and also

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1 much smaller.

2 So, instead of looking at the waste
3 fuel just being piled up as a waste, we can
4 move it back over into the fuel column and
5 fuel these kinds of reactor technologies.

6 These reactors are basically
7 passively designed. So, they automatically
8 shut down if something goes wrong with the
9 system.

10 As a matter of fact, the way that
11 works is there's a tube that has a piece of
12 frozen dissolvent that is in the liquid
13 reactor. It's frozen in a tube at the bottom.

14 If the power goes out, that tube
15 dissolves and the liquid all just goes down
16 into a tank below the reactor. So, it's a
17 very nice design.

18 And, in fact, the engineers at Oak
19 Ridge who designed this, and physicists,
20 basically did this every weekend because they
21 didn't want to stay around for the reactor on
22 the weekend. So, they turned the switch off

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1 on the fan, the plug would melt and the stuff
2 would go into it.

3 So, it's been tested thousands -
4 well, hundreds of times, anyway. It's a very
5 nice, simple system.

6 Now, this research was conducted -
7 well, this report was from 1969. So, we've
8 been sitting on this technology for forty
9 years. And now what's happening, China is
10 investing a billion dollars in this technology
11 because they got our reports off of, well, a
12 website that has all the reports on it. And
13 they're going off to implement this
14 technology.

15 So, we could replace the current
16 technology with breeder -- converter reactors
17 that could be converted into breeder reactors
18 and burn up the fuel that's sitting as waste
19 right now. Burn it up as fuel instead.

20 So, that's basically the - oh, and
21 one other thing I wanted to mention. You
22 missed a really great opportunity yesterday.

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1 The Energy Thorium Alliance had a meeting, a
2 conference here where we talked about this. I
3 think, Per, you were there.

4 And it was a really interesting
5 meeting of - it's a really vibrant community.

6 Kirk Sorenson is in the audience. He's got a
7 website called Energy from Thorium. I think
8 he's given a talk, a presentation before this
9 committee before.

10 And I emphasize this is technology
11 that could solve problems instead of having
12 everybody sit here saying, well, what are you
13 going to do about the problems.

14 Build these reactors to burn the
15 fuel. We get more energy out of it instead of
16 putting it in a hole. Thank you.

17 CHAIRMAN HAMILTON: Thank you very
18 much, Mr. McLay.

19 Mr. Michael Conley to be followed
20 by Mr. Robert Orr, Jr.

21 Mr. Conley.

22 MR. CONLEY: Good afternoon. I

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1 wrote something. I'm just going to read it.
2 I'm not a public speaker. So, please bear
3 with me.

4 Nuclear power isn't the problem.
5 the problem is with the reactors we've been
6 using to produce it.

7 Had the reactors of Fukushima had
8 the liquid fluoride thorium reactors, they
9 wouldn't have had a disaster on their hands.

10 Liquid fuel reactor technology was
11 successfully developed at Oak Ridge National
12 Labs in the 1960s.

13 Although the test reactor worked
14 flawlessly, the project was shelved, the
15 victim of Cold War technology - excuse me - a
16 victim of Cold War strategy. I said I'm not a
17 public speaker.

18 A LFTR is a completely different
19 type of reactor. For one thing, it cannot
20 melt down. It is physically impossible for a
21 LFTR to melt down.

22 And since it's air cooled, not

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1 water cooled, it does not have to be located
2 near the shore or near any water source.

3 It can even be placed in an
4 underground vault. A tsunami would roll right
5 over it like a truck over a manhole cover.

6 A LFTR uses liquid fuel, not solid
7 fuel, nuclear material dissolved in molten
8 fluoride salt. Fluoride salt is like table
9 salt, only different. It's a salt. You melt
10 it, you put in the thorium, you now have a
11 liquid fuel.

12 Conventional reactors are atomic
13 pressure cookers. They use solid fuel rods to
14 super heat water. That means there's the
15 constant danger of high pressure, ruptures,
16 and steam leaks, but liquid fuel can always
17 expand and cool off.

18 It's walk-away safe because LFTRs
19 don't use water or steam. Instead they heat a
20 common gas like CO2 to spin a turbine for
21 generating power.

22 So, if a LFTR leaks, it is not a

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1 catastrophe. The molten salt spills out and
2 cools off quickly becoming an inert lump of
3 rock.

4 The entirety of the fuel can be
5 recovered and put back in the reactor once the
6 reactor is repaired. It does not go into the
7 environment.

8 Uranium is water soluble. It can
9 be carried away by river or the moisture in
10 the air. But the fluoride salts in the
11 reactor, do not react with water or air. They
12 are inert. It can be recovered. Big, big
13 difference. Think about it.

14 LFTRs burn thorium, a mildly
15 radioactive material as common as tin, is
16 found all over the world. We've already mined
17 enough thorium to power this country for 400
18 years. That is not an exaggeration.

19 It's the waste of our rare earth
20 element mines which, by the way, are closed
21 now because China is mining rare earth and
22 refining it and selling it to us.

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1 We go hat in hand to them for our
2 rare earth to run our missile systems. That
3 doesn't sound very good to me.

4 LFTRs consume fuel so efficiently
5 that they can even use the spent fuel from
6 other reactors. Ma'am, the spent fuel from
7 other reactors, LFTRs can burn them and
8 utilize it as fuel.

9 Spent fuel is unutilized fuel.
10 Will these work? Let's build one and see.
11 That's all I'm asking. Let's build one and
12 see.

13 And those that say we shouldn't
14 build it, they should advocate us building it
15 so we can make fools out of ourselves in front
16 of the whole world.

17 So, let's just build one and see.
18 Thank you.

19 CHAIRMAN HAMILTON: Thank you very
20 much, Mr. Conley.

21 Mr. Orr.

22 MR. ORR: Mr. Chairman, ladies and

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1 gentlemen, my name is Robert Orr, Jr. I'm a
2 retired attorney from Franklin, Tennessee, a
3 member of the Thorium Energy Alliance. I was
4 here for the same conference that's been
5 referred to. A lot of my thunder has been
6 stolen, which makes my job a lot easier.

7 I've represented clients in front
8 of judges and juries for 35 years. And now as
9 a retired attorney, I only have one client.
10 And it is by far, the most important client
11 that I have ever represented or ever expect to
12 represent.

13 And that client is clean, safe,
14 cheap electric power for the future, furnished
15 by molten salt reactors, specifically the LFTR
16 that's already been referred to.

17 I don't have time to go through the
18 manifold benefits and superiorities of molten
19 salt technology, because we're not given
20 enough time.

21 Senator Alexander, our senator from
22 Tennessee, in July 2009, proposed something

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1 that he calls a blueprint for 100 new nuclear
2 reactors over the next twenty years.

3 That is a marvelous, marvelous
4 idea. He has it right. But as Mr. Conley
5 pointed out, he is advocating existing solid
6 fuel technology that is -- which, by the way,
7 is in every nuclear reactor on earth. And
8 that's what has given us Three Mile Island,
9 Chernobyl, and now it's given us Fukushima.

10 The difference is between solid
11 fuel reactor, the reactors of the past, the
12 60-year-old technology that's done pretty
13 well, but not well enough, and the new old
14 technology which is only fifty years old as
15 we've heard about with Alvin Weinberg and his
16 brilliant scientists at Oak Ridge, and that's
17 molten salt technology.

18 It will address virtually every
19 problem that you can identify associated with
20 solid fuel reactor is solved, and solved
21 forever by molten salt technology, the LFTR.

22 Now, the reason we are members of

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1 this organization is to spread the word to
2 educate. People who are against LFTR
3 technology either don't know about it, and
4 that's what we're trying to solve. But if
5 they do know about it and they're not in favor
6 of it, then it's everyone's job to ask why.
7 Why are you not in favor of it? And then
8 listen very, very, very closely to the answer,
9 analyze the answer.

10 I can virtually guarantee that the
11 answer that you hear will not solve the
12 electricity problems for the rest of the world
13 and for the rest of history in a clean, safe,
14 abundant, cheap way.

15 LFTR technology will do that. The
16 Chinese are developing it. While you all are
17 sitting right here, the Chinese are working
18 vigorously and aggressively to take this
19 technology away from us.

20 And then as Mr. Conley pointed out
21 when they do that, we're going to have to go
22 to them hat in hand to get it back.

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1 It's our technology. It's sitting
2 on a shelf. There are scientists at the
3 University of Tennessee today who would like
4 nothing better than to dust that technology
5 off, start where it ended. And I think
6 sincerely within ten years, we could shut down
7 every coal plant on earth. Thank you.

8 CHAIRMAN HAMILTON: Thank you very
9 much, Mr. Orr.

10 Mr. Bennet, Bryan Bennett is next.
11 And he will be followed by Parker Griffith.

12 Mr. Bennet.

13 MR. BENNET: Thank you, Mr.
14 Chairman, and I appreciate being here today.
15 And I appreciate those kind words about
16 staffers.

17 Having been a staffer, I'm a
18 retired colonel in the Air Force with four
19 assignments at the Pentagon which is more
20 assignments than any self-respecting pilot
21 would want to admit to. But it was important
22 work and I believed in it.

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1 It seems to me that this commission
2 has worked hard and worked honestly and openly
3 dealing with the problems that you have. And
4 that is dealing with the nuclear material
5 waste that is out there.

6 My concern is that I didn't see
7 anything in the report that addresses trying
8 to avoid that much nuclear waste.

9 I too am astounded by what I have
10 heard and learned about LFTR, the liquid
11 fluoride thorium reactor. And I saw some of
12 you kind of smile when it brings up, and that
13 does concern me a little bit. I'm not sure
14 what you've heard.

15 We can study endlessly various
16 things. My first assignment out of Air
17 Command and Staff College was in doctrine,
18 concepts, and objectives.

19 And we were known for these
20 esoteric pieces that had a four-year study
21 followed by a five-year study followed by a
22 few nuances here that went on to something,

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1 but also they came out with new leadership out
2 of that.

3 General John Pustay came in with a
4 make-it-happen kind of an attitude. And out
5 of the doctrine shop came the A-10, the
6 airplane the A-10 which we have in the
7 inventory today for close air support. It's
8 been a tremendous asset. So, there are things
9 that studies can do if there's a focus put to
10 it.

11 I would like to see if this
12 commission to recommend to DOE or DARPA or
13 someone, to take some hard looks at the liquid
14 fluoride thorium reactor. Prove it wrong.

15 I've heard some others say that.
16 What are you hearing about LFTR that's not -
17 what are you hearing about the molten salt
18 reactors that's not there?

19 But what I am also hearing, and if
20 you haven't heard this, that a Ph.D. out of
21 Drexel University, a fine school, is heading
22 up the Chinese LFTR program, molten salt

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1 reactor program. And he's very well connected
2 with a Chinese family.

3 If I know that and you don't, I
4 would be concerned especially if we're talking
5 about American leadership in something.

6 If LFTR consumes 99 percent of the
7 nuclear material, consumes 99 percent, it only
8 has one percent left over.

9 Instead of a Light Water Reactor
10 that consumes one percent and has 99 percent
11 left over, that would certainly seem to me to
12 make the problem of finding safe nuclear
13 storage a smaller problem at least in volume,
14 if not anything else.

15 I would ask this commission to
16 please take a look at something that is safe,
17 something that operates in one atmospheric
18 pressure. It's not going to blow up on you.
19 That is passively safe. And that if it does
20 lose power to it, the freeze plug and the
21 thing that blows out and it just melts into a
22 vessel of salt, it's passively safe, in other

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1 words.

2 There are a lot of attributes that
3 there are people who can talk to you and
4 perhaps challenge some of the other things you
5 may have heard about it.

6 And I would ask that that be done
7 and DOE take a look at it. Thank you.

8 CHAIRMAN HAMILTON: Thank you very
9 much, Colonel Bennet.

10 We now have Parker Griffith. He
11 will be followed by Diane D'Arrigo. I'm not
12 sure I pronounced that correctly, but I
13 apologize if I mispronounced it.

14 Mr. Griffith.

15 MR. GRIFFITH: Thank you, Mr.
16 Chairman, and committee. I'm Parker Griffith.

17 I'm a radiation oncologist by training. And
18 a former Congressman in my district, was the
19 district that created the Saturn V. And so,
20 we believe that America can solve this nuclear
21 problem that we have.

22 When I listened to the Committee

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1 today, it reminded me of all the seminars I
2 sat in on lung cancer. And then we went out
3 in the hall and smoked.

4 (Laughter.)

5 MR. GRIFFITH: I think that - I
6 think we've got to get a hard, hard, hard look
7 at the technology that's available out there.

8 I think the molten liquid and the
9 thorium technology is in fact workable, but I
10 do think we have to take a Sputnik attitude
11 toward it in the sense that we're not now on a
12 global stage communicating with China, India,
13 and others. And so, there's not a lot of time
14 for us to be king of the hill and assume that
15 China is going to wait on us or allow us to
16 catch up with them.

17 So, we need - we need direction.
18 We need - we need an executive command to put
19 - I think in 1962 when Dr. Seaborg responded
20 to President Kennedy about nuclear power, he
21 mentioned thorium.

22 And I believe that it's an answer.

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1 And I think we have to put a full-court press
2 on to prove it or disprove it. Because right
3 now - right now we're turning our nuclear
4 energy resources into a chronic sore or a
5 chronic illness.

6 We need to look for a cure. We're
7 putting band-aids and band-aids and casts on
8 and we're responding to a crisis in Japan, and
9 we'll have another crisis down the road.

10 We are a nuclear community. Browns
11 Ferry came through the massive tornadoes very
12 well. I compliment TVA. And, you know,
13 they've been under the gun quite a bit.

14 We know we can do this, but we
15 cannot do it unless we really feel threatened.
16 Sputnik threatened us. We're being
17 threatened now.

18 If China becomes energy
19 independent, they rule the world and we will
20 still be in the Mideast ten years in a country
21 - 11 years in a country all about hydrocarbon.

22 Thank you. Appreciate it.

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1 CHAIRMAN HAMILTON: Thank you very
2 much, and now Diane D'Arrigo. And the final
3 speaker will be following her, Alex Cannara.

4 Diane, I'm not sure I pronounced
5 your name correctly.

6 MS. D'ARRIGO: You got it.

7 CHAIRMAN HAMILTON: Okay.

8 MS. D'ARRIGO: It'S Diane D'Arrigo
9 and I'm with Nuclear Information Resource
10 Service.

11 And I wanted to express
12 disappointment with the failure of any of the
13 committees, particularly the Disposal - or the
14 Transport and Storage Committee, to
15 acknowledge the agreed upon statement form
16 over 170 organizations for hardened onsite
17 storage that would be an interim storage step
18 that could be taken without transport.

19 When the technical concerns were
20 presented, we expressed our technical
21 opposition to this in a presentation in
22 February. But the message today that we're

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1 hearing, is that that was completely ignored.

2 And part of the problem with
3 proceeding with what to do with nuclear waste
4 has been ignoring what the public legitimately
5 cares about and is concerned about.

6 And so, I would repeat what others
7 have said, but reemphasize that if you want to
8 involve the public, if you want public
9 support, you can't take our advice and then
10 completely ignore it, not even address it.

11 So, this is just a draft. So,
12 maybe in the final we'll see some expression
13 of an opinion about the concern -- the
14 recommendations that we've made.

15 It seems like we were concerned
16 about the -- we are concerned about the lack
17 of balance on the Committee. And what this
18 recommendation appears to do is to simply
19 provide a way for the liability for the
20 irradiated fuel to be shifted clearly to the
21 taxpayer. All it does is to set up another
22 site that's a target that's another facility

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1 that would have a risk of environmental or
2 safety or security risks.

3 And add to it the transport risks
4 and there's no real advantage. In fact,
5 there's the disadvantage of the transport
6 risks and the additional site or sites that
7 would be the interim sites.

8 So if you proceed with this, you
9 are simply repeating the same mistake as has
10 been made over and over in nuclear waste
11 siting.

12 And we will have more comments when
13 we review in more detail.

14 MEMBER SHARP: Mr. Chairman?

15 CHAIRMAN HAMILTON: Yes.

16 MEMBER SHARP: Could I just make an
17 indication I appreciate the comments, and it's
18 true in our verbal comments we did not
19 reference the document that so many of you
20 worked so hard on.

21 MS. D'ARRIGO: Yes.

22 MEMBER SHARP: But in fact, and

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1 unfortunately this is -- we're ahead of
2 ourselves in terms of what we've released.
3 But in the draft report already, I assure you
4 there is both reference to your document and
5 reference to the arguments that you folks make
6 about the transportation question if you go to
7 consolidating storage, as well as to the HOSS
8 proposal.

9 And while you may or may not -- we
10 did not reach the same conclusion you reached.

11 We clearly, and I'm sorry we didn't say so
12 verbally, acknowledge both the arguments and
13 the document itself.

14 MS. D'ARRIGO: Okay. The point
15 really is --

16 MEMBER SHARP: Although, I
17 understand you really care about the
18 substance, but --

19 MS. D'ARRIGO: Well, no, I certainly
20 care about the substance, but also part of
21 this is dealing with the public. And so,
22 okay, so you'll dismiss us later in writing

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1 and you didn't dismiss us yet today in
2 writing.

3 I'm just -

4 MEMBER SHARP: No, no, I --

5 MS. D'ARRIGO: -- expressing that
6 this is something that was hard pressed, hard
7 fought for.

8 I was one of the biggest dissenters
9 myself to some pieces of it, but we are in
10 agreement on it that you can't - we've got an
11 immediate danger at our facilities. And we've
12 got a faster way to deal with it than having
13 any kind of siting program.

14 MEMBER SHARP: I understand. I'm
15 not going to argue the content with you, but I
16 want to be very clear that we more than heard
17 you, we actually addressed some of the things,
18 but I regret we didn't say anything so that
19 you and others could actually know that fact.

20 CHAIRMAN HAMILTON: Per.

21 MEMBER PETERSON: Could I add one
22 additional question?

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1 One of the major elements of the
2 recommendation is the need to focus on trying
3 to move material from shutdown reactor sites
4 where you have nine, and consolidate it to a
5 number of sites.

6 And in your comments, you did
7 mention, you know, and emphasize the fact that
8 you have multiple targets and this would in
9 effect reduce the number of targets.

10 I think it would be very -

11 MS. D'ARRIGO: How would it reduce
12 it?

13 MEMBER PETERSON: Going from nine to
14 a smaller number is a reduction, but -

15 MS. D'ARRIGO: Yes, but you're not
16 stopping making more of any of them.

17 MEMBER PETERSON: But again, of
18 course, the Commission's recommendation is to
19 focus the effort on the shutdown sites and to
20 move that material.

21 I think it would be helpful to have
22 some better understanding of the arguments for

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1 and against that. Because to me at least it's
2 not -

3 MS. D'ARRIGO: For the closed
4 reactors?

5 MEMBER PETERSON: For the closed
6 reactors.

7 MS. D'ARRIGO: Okay.

8 MEMBER PETERSON: Why material
9 should remain at those sites rather than being
10 consolidated.

11 And, in fact, I'm also skeptical
12 about the wisdom of moving large amount of
13 stuff from operating reactor sites. But the
14 closed ones, at least I can't figure out why
15 it doesn't make sense to try to consolidate
16 that material.

17 And it would be helpful to have at
18 least those arguments worked out in better
19 detail because it to me, at least, I think it
20 seems to make sense that if you consolidate
21 the material to a smaller number of sites, it
22 does generate less risk.

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1 MS. D'ARRIGO: Well, some, you know,
2 I'm not going to speak for the whole group of
3 170, but our argument would be that if you
4 close them down, you're going to have a lot
5 more interest and willingness of people to do
6 something else with it.

7 But to just move it from a facility
8 that's continuing to generate it is - it's not
9 solving the problem. It's exacerbating it.

10 CHAIRMAN HAMILTON: Thank you very
11 much, Ms. D'Arrigo.

12 And the final speaker will be Mr.
13 Cannara.

14 MR. CANNARA: Hello. Pardon my
15 dress. I had to walk across town to find this
16 place. I'm from California. So, I don't know
17 much about D.C., but I do know how D.C. takes
18 time to do things.

19 How many people here, including in
20 the audience, have read the AEC report given
21 to John F. Kennedy at his request in 1962?

22 (Show of hands.)

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1 MR. CANNARA: Good. Someone has.
2 Very rare event. It's only entitled Civilian
3 Nuclear Power and it addresses directly the
4 fears that they had at the time that we would
5 fall behind in having energy sufficient for
6 economy and safety and world power in 1960s.
7 And it specifically outlines what we should
8 have done, and we have not done it.

9 What we should have done according
10 to the report, was to start with the Light
11 Water Reactor that Hyman Ricover put in his
12 submarines that Alvin Weinberg helped design.

13 And then as we move ahead with the
14 breeder reactor program, we would substitute
15 and eliminate these water-based coolant
16 systems which are giving us all the trouble we
17 now experience, which actually is not that
18 very much trouble.

19 Nuclear power is probably the
20 safest form of mass energy generation than any
21 - that humans have ever invented.

22 Certainly the invention of fire

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1 400,000 years ago or control of it has not -
2 has a large number of casualties.

3 So, what I want to know is if the
4 Commission is actually going to take account
5 of what was said at taxpayer expense to John
6 F. Kennedy in 1962, and review the
7 recommendations which said by the year 2000 we
8 should have 700 gigawatts of safe nuclear
9 power based on breeder reactors.

10 At the time, they weren't afraid to
11 make plutonium. So, they would breed from
12 regular uranium, spent fuel, whatever.

13 We don't have to do that. We have
14 a thousand years worth of thorium in one mine,
15 1,400 acres in Idaho, Lemhi Pass between
16 Montana and Idaho.

17 And so, we can do the thorium
18 breeder reactor which Weinberg and the ORNL
19 team worked on for twenty years and perfected
20 and operated for four years in the 1960s.

21 And that reactor is exactly what
22 the son of the president, the former president

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1 of China now has a billion dollars to develop
2 using our plans, all our research, everything
3 that we did as an American research
4 institution 49 years ago.

5 So, even if Washington does operate
6 slowly, 49 years does sound to be a little
7 excessive. And that's the point I think we
8 need to make to this Commission, to whoever is
9 going to listen to this report.

10 Thanks.

11 CHAIRMAN HAMILTON: Thank you very
12 much, Mr. Cannara. I thank all of our
13 presenters for their statements this
14 afternoon. I thank the commissioners for
15 their participation today.

16 And, Vicky, I want to thank you
17 especially for helping me on the chairing.

18 MEMBER BAILEY: That's all right.

19 CHAIRMAN HAMILTON: That adjourns
20 the meeting. Thank you very much.

21 (Whereupon, the above-entitled
22 matter went off the record at 3:50 p.m.)

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