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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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MEETING WITH THE
ADVISORY COMMITTEE ON NUCLEAR WASTE (ACNW)

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WEDNESDAY
JANUARY 11, 2006

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The Commission met with the Advisory
Committee on Nuclear Waste at 2:00 p.m., 11555 Rockville Pike,
Rockville, Maryland, the Honorable NILS J. DIAZ, Chairman,
presiding.

COMMISSIONERS PRESENT:

- NILS J. DIAZ, Chairman
- EDWARD McGAFFIGAN, JR. Commissioner
- JEFFREY S. MERRIFIELD, Commissioner
- GREGORY B. JACZKO, Commissioner
- PETER B. LYONS, Commissioner

1 ACNW MEMBERS PRESENT:

2 MICHAEL T. RYAN, Chairman

3 ALLEN G. CROFF, Vice Chairman

4 JAMES H. CLARKE

5 WILLIAM J. HINZE

6 RUTH F. WEINER

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

(9:57 a.m.)

CHAIRMAN DIAZ: The Commission is pleased to meet today to hear from the members of Advisory Committee on Nuclear Waste the status of the Committee's recent activities and its plan for next year.

Of course, the Committee's recent activity eventually becomes – I just gave three speeches, I'm still on my last speech, Commission's activities. This is one of our periodic briefings. And we appreciate you coming in and keeping the Commission fully and currently informed.

The Committee advises the Commission on a wide variety of nuclear waste and materials issues. And today's meeting is on low-level waste, waste determination activities, decommissioning, igneous activities as it relates to the high-level waste program.

We are looking forward to discussing the issues on the agenda in today's briefing. And do my fellow Commissioners have any comments?

(No response.)

CHAIRMAN DIAZ: If not, Dr. Ryan, please proceed.

DR. RYAN: Thank you, Chairman Diaz. It's a pleasure to be with you and Commissioners McGaffigan, Merrifield, Lyons, and Jaczko. The Advisory Committee is pleased to be with you today for this periodic briefing.

I would like to spend on -- slide 3, I believe is the number -- a couple of items on the agenda. I'm going to discuss with you briefly

1 low-level radioactive waste and our white paper. We are in preparation on
2 some comments on the 10 CFR 63 standard, some radiation protection
3 issues, and then our action plan, including our Tier I and Tier II activities.

4 Dr. Weiner will then discuss our review of research
5 activities in the agency and the technical assistance activities provided by
6 the Center for Nuclear Waste Regulatory Analysis.

7 Mr. Croff will then discuss the Committee's activities
8 related to the staff development of the Standard Review Plan related to
9 waste determinations.

10 Professor Clarke will discuss the Committee's activities in
11 support of the decommissioning program, including rulemaking that is
12 underway.

13 And, finally, Professor Hinze will discuss updates on
14 information related to igneous activity related to Yucca Mountain. We'll
15 then be happy to entertain your questions and comments as we will
16 throughout the entire briefing.

17 Let me turn now to slide 6, if I may, please. It's important
18 at the outset with regard to low-level radioactive waste that the Committee
19 believes that the current regulations are fully protective of the public health
20 and safety and fully protective of worker health and safety.

21 The white paper which we have recently provided to you
22 is a detailed summary of low-level radioactive waste regulation in the
23 United States with particular emphasis on the technical bases for the
24 regulations that exist in 10 CFR Part 61.

25 The Committee also believes that this white paper

1 provides a framework to identify opportunities to better risk-inform and
2 thereby improve the clarity and transparency of low-level regulation for
3 stakeholders.

4 The Committee has carefully coordinated and
5 communicated with the Nuclear Materials Safety and Safeguards staff on
6 the development of this white paper. And we further carefully coordinated
7 how any of the opportunities that we have identified may fit into their
8 agenda for their work activities in this area. We look forward to your
9 feedback on the white paper and further input and guidance from the staff
10 on this topic.

11 The opportunities for risk-informed improvements
12 identified in our letter to you are meant to be examples rather than an
13 all-inclusive list. The Committee believes that in 10 CFR 61.58 on
14 alternative requirements for waste classification, that that part provides an
15 opportunity to use alternative definitions for classifications of waste, taking
16 into account site-specific issues, waste-specific issues, and others that
17 gives, we believe, the Commission the opportunity to actually better
18 risk-inform perhaps new or emerging low-level wastes or other issues that
19 may be current, as compared to what was first envisioned in the late '70s,
20 when the regulation was in its developmental phases.

21 Again, we look forward to the continued dialogue with
22 staff, and we're planning a working group session with staff and
23 stakeholder participation to further develop these concepts and ideas.

24 Next slide, please, slide 7. The Committee, as promised
25 in late 2004, followed up with the International Commission on

1 Radiological Protection's foundation documents that were the
2 underpinning for its 2005 general recommendations.

3 In reviewing those documents, we can summarize by
4 saying that we found nothing in the foundation documents that indicated
5 that our original recommendations to you in 2004 should change.

6 We further extended our review to the foundation
7 document that provided a conceptual framework for standards related to
8 non-human biota. And, in fact, we found no evidence to support the need
9 for such a standard and, in fact, found no evidence to contraindicate the
10 longstanding principle that if you protect man, you protect the environment
11 and everything in it. So we found no reason to offer you any advise
12 beyond that observation.

13 We also reviewed collective dose. The staff presented
14 some options for considering collective dose. And after hearing their
15 presentation and considering, we found or concluded that collective dose
16 is useful for comparative analyses or cost trade-off kinds of analyses or in
17 some very specific circumstances for work-planning activities for small
18 workgroups and so forth. But we found they're generally not applicable
19 and, frankly, often misused and used in a way that mischaracterizes risk.
20 So we think it should be used, again in these very limited circumstances,
21 and very carefully after considering to be sure that it's not misused or
22 miscommunicates risk.

23 Turn to slide 8, please. We further reviewed, as it was
24 published in the National Academy of Sciences' committee report, on the
25 biological effects of ionizing radiation.

1 The report was voluminous, over 700 pages in length.
2 And the report concluded that the current scientific evidence is consistent
3 with the hypothesis that there is a linear dose-response relationship
4 between exposure to ionizing radiation and the development of
5 radiation-induced solid tumors and solid cancers in humans.

6 The report further reported that it is unlikely that a
7 threshold exists for the induction of cancers but notes that the occurrence
8 of radiation-induced cancers at low doses is small.

9 The report maintains that other health effects, such as
10 heart disease and stroke, occur at high radiation doses but that additional
11 data must be gathered before an assessment of any possible
12 dose-response can be made of connections between low-dose radiation
13 and non-cancer health effects.

14 The report also noted that knowledge of adaptive
15 responses, genomic instability, and bistandard signaling among cells that
16 may act to alter radiation cancer risk was judged to be insufficient to be
17 incorporated in a meaningful way into the modeling of epidemiologic data.

18 In short, everything seems to be pretty much the same as
19 the previous BEIR reports without significant change in risk estimation with
20 regard to radiation exposure.

21 COMMISSIONER MERRIFIELD: Mr. Chairman, for
22 purposes of clarification, the slide -- and we do have one down side. And
23 our slides have to be relatively brief in order for them to be transmitted
24 over the Web.

25 The two bullets you have here on the results. The linear

1 no threshold model is the preferred model for radiation. And newer
2 radiation biological information is not sufficient at this time for changes.

3 That is your summary of the findings in the BEIR report,
4 not the independent findings of the ACNW, correct?

5 DR. RYAN: That's correct, Commissioner Merrifield. This
6 is the summary from the report. And I'm providing you our review. And
7 that's what we expect.

8 COMMISSIONER MERRIFIELD: Right.

9 DR. RYAN: What I said in the more lengthy statement to
10 you is directly from the report.

11 COMMISSIONER MERRIFIELD: Yes. I wanted to make
12 that point for clarification and to underline that in the record so that there
13 was no misunderstanding –

14 DR. RYAN: Thank you.

15 COMMISSIONER MERRIFIELD: -- as we later went back
16 and looked at this, perhaps thought that you agreed with those
17 conclusions because you may, but, then, you may not.

18 DR. RYAN: Yes. Again, we wanted to report that. And
19 I think the conclusion statement that we believe is that nothing has
20 changed from the previous BEIR reports and the risk estimators that they
21 have previously reported. Thank you very much. We appreciate the
22 clarification.

23 On slide 9, we also reviewed the Occupational Safety and
24 Health Administration's request for information with regard to their interest
25 in modifying its radiation protection standards. And we found that and

1 believe that existing -- that is "we," the committee -- that existing radiation
2 protection programs provide adequate radiation protection to workers.

3 And our letter report to you summarized over a dozen
4 components of this robust radiation protection system in the United States.
5 I'll just mention a few from the top of that list of ten: the NRC and
6 Agreement State regulations promulgated for activities regulated by the
7 Atomic Energy Act, State radiation protection programs for non-AEA
8 radioactive materials, federal guidance on sources of electronic product
9 radiation from the Center for Devices and Radiological Health of the Food
10 and Drug Administration, State programs for electronic product radiation,
11 and the U.S. Environmental Protection Agency's generally applicable
12 radiation protection standards, just to mention a few.

13 We also found that the trends in worker exposures that
14 were suggested as being increasing, were in fact, we found evidence to
15 the contrary. We looked carefully at our U.S. NRC, Nuclear Regulatory
16 Commission, publication, NUREG-0713, and found that trends in
17 measurable exposure, as reported by total effective dose equivalent for
18 worker, have decreased in every one of six categories of NRC licensees
19 from the period of 1994 through 2003, which is the year for which the
20 latest report has been published. So we concluded that there really wasn't
21 a need for a change to that regulation or activity by OSHA in this area.

22 COMMISSIONER McGAFFIGAN: Can I just ask a
23 clarifying question? Are you familiar with the fact that the current OSHA
24 regulations I think reflect ICRP-2 and that were never updated to be
25 consistent with NRC regulations and DOE orders?

1 I would be a little wary of saying they don't need to be
2 updated. They might not need to be updated to where you might have
3 thought OSHA might want to go, but getting OSHA to sort of come up to
4 where the -- I think there is a Presidential guidance document signed by
5 President Reagan in 1987. And I think they're the sole agency of
6 government that has never brought their regulations up to the Presidential
7 guidance.

8 They're back in ICRP-2 space or whatever the '60s is.
9 We're regulations issued in the '70s, mid to early '70s.

10 DR. RYAN: Commissioner McGaffigan, I appreciate the
11 clarification. We were I think responding to the idea of them issuing new
12 regulations, but certainly consistency among agencies to have the same
13 basis for regulation makes sense. But that doesn't necessarily imply that
14 they would change it but simply provide, as the NRC does, guidance on
15 what the right technical basis might be.

16 COMMISSIONER McGAFFIGAN: Well, they actually
17 need to change the regulation to get it to be consistent with the
18 Presidential guidance of 1987, which is consistent with, you know, not
19 ICRP-60 but ICRP whatever was between 2 and 60, you know, 28 or -- I
20 can't remember the number.

21 DR. RYAN: ICRP-2 was first written in 1959 --

22 COMMISSIONER McGAFFIGAN: Right.

23 DR. RYAN: -- and used throughout the '60s.

24 COMMISSIONER McGAFFIGAN: Yes. And that's where
25 OSHA is today in its regulations. So there is a need for change in OSHA's

1 regulations. The question is, did they take the small increment to get
2 themselves to where the other agencies are consistent with the 1987
3 Presidential guidance or do they take an extra step to get themselves
4 consistent where the ICRP-60 and the likely new ICRP report are going to
5 be? And that's the issue that they're grappling with.

6 It sounds like you dealt with the latter issue but perhaps
7 not with the former.

8 DR. RYAN: That's a fair comment. Yes, sir. Thank you.

9 COMMISSIONER MERRIFIELD: Mr. Chairman, a
10 clarifying question on the same slide. It's very helpful information you're
11 providing to the Commission. Have we provided your analysis either to the
12 Department of Labor or to other entities outside of the NRC family?

13 DR. RYAN: As far as I know, Commissioner, we have
14 provided it to you, and that is as far as it has gone. Now, where it has
15 gone beyond that, I do not know. Thank you.

16 COMMISSIONER McGAFFIGAN: And just for the record,
17 Mr. Chairman, I don't think the ACMUI took me up on it, but I did urge
18 ACMUI to be aware of what was happening in OSHA space and aware of
19 what was happening in ICRP space because the medical community if
20 changes are made in this area is likely to be the most impacted
21 community, not power reactors or whatever because power reactors, as
22 you say, are already achieving the equivalent of ICRP-60 results, but the
23 medical community, it would be a big potential change.

24 I don't think that that community is necessarily fully aware
25 of what is going on.

1 DR. RYAN: Thank you. We'll continue to follow and
2 consider your comments carefully. Thank you, Commissioner.

3 I would like to now turn our attention to our action plan.
4 We have a number of Tier I and Tier II activities. I'll start with the
5 proposed Yucca Mountain repository.

6 As we all know the Department of Energy plans to submit
7 a license application for the first geologic repository in the United States.
8 Though the schedule for that license application is not as clear as it has
9 been in the past, it is certainly something we will be prepared to address
10 as it comes in in the way you have asked us to address it.

11 In the meantime, until the license application is submitted,
12 the Committee will continue to perform technical reviews of the staff's
13 prelicensing programs. Areas of interest include progress in staff
14 assessments on the effects of certain disruptive events, the igneous
15 activity and seismicity, on which we'll report today, and then on the overall
16 repository performance in the post-closure phase and progress in staff
17 efforts to develop an independent performance assessment computer
18 code capability for evaluating repository performance over longer times,
19 consistent with the standard that has been promulgated by the EPA.

20 Once the license application comes in, and, of course, as
21 you directed us, we will be working at your direction and we'll prepare
22 ourselves by studying the license application when and if it comes in. And
23 we'll be ready to take assignments that you choose to provide to us.

24 The second area of the risk-informing nuclear waste and
25 materials activities, the Committee will continue to support the

1 Commission's policy statement on the use of probabilistic risk assessment
2 methods.

3 The Committee is already working in several areas,
4 including decommissioning of complex sites, waste determinations,
5 low-level waste, and the Yucca Mountain prelicensing reviews, where
6 opportunities exist to risk-inform these activities.

7 Specifically, the Committee will continue to evaluate the
8 strengths and weaknesses of adapting PRA techniques to nuclear
9 materials and waste areas and communicate risk insights to the
10 Commission for use in their decision-making.

11 I was happy to be here in October as part of the NMSS
12 briefing. And that's a success story that I mentioned to you then that we
13 have worked very carefully with them and have become integrated into
14 their stakeholder efforts. We participated as a committee of the whole in
15 that activity and will continue to look for opportunities to coordinate
16 proactively with NMSS on opportunities where our efforts and theirs can
17 be well-coordinated.

18 So let's see. I think I've talked already about
19 decommissioning will be covered along with waste determination. So I will
20 let my colleagues speak on those activities and plans.

21 The Tier II activities include again health physics, which
22 we will continue to follow, as we expect the ICRP to revise their guidance.
23 And off of that, we'll be ready for that. We will also identify any emerging
24 radiobiological data or issues that may develop.

25 We are prepared for the Package Performance Study

1 review, which we now understand that that test plan will be available
2 around midyear of 2006. And, as you have indicated, we will be ready to
3 provide you with a review of that Package Performance Study.

4 We'll continue to advise with waste management research
5 activities, both in the Research Division here at the agency and at the
6 center in San Antonio. And we will also be ready to review other fuel cycle
7 facilities as needed and as priorities dictate to be ready to address any
8 emerging issues in those areas.

9 We have several working groups planned over the coming
10 year in decommissioning West Valley, in modeling and monitoring. And
11 you'll hear from some of these from our colleagues. I'll just mention one
12 that I think is interesting and important.

13 Modeling and monitoring working group is designed to
14 take advantage of trying to coordinate monitoring that's done for the
15 purpose of compliance demonstration and integrating that with
16 assessment that's done for modeling purposes.

17 We believe there are some opportunities where if those
18 two goals are combined, we can not only demonstrate compliance but
19 increase confidence. And that's particularly important in the area of
20 decommissioning, where longer-term compliance and performance
21 demonstration are helpful. And I believe Professor Clarke is going to talk
22 a little bit more about that.

23 So, without further ado, I will then turn the discussion to
24 Dr. Weiner, who is going to provide you with an update and review of
25 selected NRC research and technical assistance activities.

1 DR. WEINER: Thank you, Dr. Ryan. I am going to be
2 reporting, as Dr. Ryan said, on our review of selected NRC research and
3 technical assistance programs. We do these reviews to ensure that the
4 programs are of value to the work of NMSS and that they make the best
5 possible use of the rather limited research budget that NRC has.

6 Next slide, please. Recent activities of the Committee in
7 connection with our research overviews. A group of Committee members
8 visited the Center for Nuclear Waste Regulatory Analysis in April 2005.
9 And the Committee received a briefing by Research on the waste safety
10 research program in July 2005 and a briefing on reactive transport of
11 radionuclides in November and December of 2005. These will be reported
12 on in the next few slides.

13 Could I have the next slide, please. The Committee has
14 reported to the Commission on research-sponsored work on groundwater
15 discharge in a letter, April 2005, reported on the Center for Nuclear Waste
16 Regulatory Analysis programs. And the first of these reports went to the
17 Commission in August of 2005. The second report on igneous activity was
18 issued in December of 2005. A report on research-sponsored programs
19 and an overview of these programs is still a work in progress.

20 Could I have the next slide, please. At our working group
21 meeting in Las Vegas, there was considerable interest and discussion of
22 the question of igneous activity. So that our 2005 visit to the Center
23 focused on igneous activity. And Dr. Hinze will report in more detail on
24 that.

25 Three member of the Advisory Committee on Nuclear

1 Waste visited the center, together with ACNW staff, NMSS staff, and two
2 consultants. Because the visit focused on igneous activity, I will not report
3 further on that here.

4 We also reviewed the Center's work on container life and
5 the source term on their codes and models for complex decommissioning
6 sites and on radionuclide retardation.

7 The Center is reviewing codes, several codes and models,
8 for use in performance assessment of decommissioning sites. And that
9 is really the limit of their work there. They're not designing their own
10 codes.

11 The Center's work on source term, near field environment,
12 radionuclide retardation, and on the current version of the total system
13 performance assessment is very comprehensive and is one of the
14 Center's strengths. This is also work that is preparing the NMSS staff to
15 do a better job in reviewing the Yucca Mountain license application.

16 Could I have the next slide, please. The results of this
17 work to date include characterization of the passive film in alloy 22,
18 quantification of the behavior of localized corrosion, and corrosion
19 inhibitors, and the evaluation of the water chemistry on radionuclide
20 absorption and desorption.

21 This is ongoing experimental work and some field work by
22 the Center and is directed toward developing input parameters to
23 performance assessment. The Center's experimental work is independent
24 of other work and is exceedingly thorough. They have found that it is
25 markedly better to use their own experimental work when that is possible.

1 All models they believe -- and I tend to agree with them --
2 should essentially be grounded somewhere in experimental observation.
3 Although this is not always possible, the Center does do it to the extent
4 that they can.

5 There has been significant progress in understanding of
6 the corrosion mechanisms and the influence of water chemistry; in
7 particular, the inhibiting influence of corrosion of anions in the water that
8 inhibit corrosion by chlorides. The Center in their studies of spent fuel
9 dissolution is using both values from the literature and the results of their
10 own experimental work.

11 Could I have the next slide, please.

12 COMMISSIONER McGAFFIGAN: Could I ask a clarifying
13 question just very quickly? Is this work dependent on whether it's a cold
14 or hot repository, whether it's below the boiling point of water, or not, the
15 temperature in the first --

16 DR. WEINER: They are looking at the temperature
17 dependence of these processes, taking into account both. In other words,
18 as I gather, the tenor of your question is I believe that the work that they're
19 doing would be applicable in any case to both cold and hot repositories.
20 It is a very comprehensive program on corrosion.

21 The other research-sponsored work I wanted to say is
22 very high-quality work that is done with limited funding. And the Nuclear
23 Regulatory Commission has leveraged the effectiveness of these
24 programs by cooperative programs with other Federal agencies, with
25 national and international research organizations.

1 The infiltration and groundwater recharge studies have led
2 to a better understanding of these processes using the methods that are
3 developed in research. The continued collaboration between the NRC and
4 other agencies is a very cost-effective way to do this work. The
5 Committee has noted that the cost to NRC to date of this research has
6 been approximately two percent of the total cost.

7 The collaborative research program is important because
8 it is aimed at reducing model complexity and assessing uncertainty while
9 maintaining a realistic model of groundwater recharge and the ability to
10 support risk-informed decision-making.

11 Both the field studies and the model abstraction research
12 appear to have important applications in site characterization, in the
13 modeling of flow and transport of radionuclides in performance
14 assessment, and in technology needed to isolate contaminants.

15 The Committee has encouraged the research staff to
16 develop strategies to enable the transfer of results from the studies at the
17 Beltsville site, which is a cooperative site with USDA, to other hydrologic
18 environments.

19 At the present time, they're simply looking very closely at
20 the techniques that can be used to measure water recharge at Beltsville,
21 but with appropriate parameter changes, this can probably be used at
22 other sites.

23 Could I have the next slide, please? As has already been
24 mentioned in Dr. Ryan's discussion of Tier II topics in the action plan, the
25 Committee is going to undertake a review of the Package Performance

1 Study protocols. And we are preparing ourselves for that.

2 I would like now to turn the presentation over to Mr. Allen
3 Croff, Vice Chairman.

4 MR. CROFF: Thank you very much, Dr. Weiner.

5 This afternoon I would like to report on the Committee's activities
6 concerning waste determinations.

7 Next slide, please. The Committee's objectives
8 concerning waste determinations are twofold: first, to provide advice
9 concerning the development and implementation of a Standard Review
10 Plan so that its use in reviewing waste determinations will be risk-informed;
11 and, secondly, to evaluate emerging technologies and approaches related
12 to waste determinations in areas such as waste retrieval, waste
13 processing, and waste stabilization.

14 Next slide, please. The Committee's waste determination
15 activities in fiscal year 2005 began in November 2004 with a briefing by
16 staff on the history of waste determinations, current waste determination
17 criteria, and staff's path forward.

18 In June 2005, a Committee staff member and I attended
19 an interagency cement materials workshop. This subject is important
20 because cement materials are central to on-site disposal of waste
21 determined to be non-high-level waste because they are used to stabilize
22 the waste, to fill tanks, and as disposable structures.

23 The workshop summarized the state-of-the-art for
24 predicting the performance of cement materials and provided the
25 Committee background useful in developing the agenda for a planned

1 working group meeting on waste determinations.

2 The Committee's waste determination working group
3 meeting was held last August. It was held over 2 full days with 13
4 speakers and 3 panels. The workshop summarized the state of
5 technology related to waste determinations by addressing waste retrieval,
6 waste processing, waste forms, tank closure, performance assessment,
7 and monitoring.

8 Also in August, three Committee members plus
9 Committee staff, Nuclear Materials Safety and Safeguards staff, and a
10 member of the public toured and were briefed on facilities and activities at
11 the Savannah River site concerning waste determinations and the planned
12 mixed oxide fuel fabrication plant. This provided an excellent opportunity
13 to see the physical situation and to have discussions with the Department
14 of Energy and its contractors.

15 In September of last year, AEA Technologies
16 demonstrated advanced technology for retrieving sludge from large
17 underground tanks and calcine from Idaho bins on simulated waste. This
18 demonstration was attended by a Committee staff member.

19 Next slide, please. Our activities have continued into
20 fiscal year 2006 with Committee staff attending the initial meeting of a
21 National Academy of Sciences committee on barriers related to
22 near-surface disposal of hazardous waste. This study is scheduled for
23 completion in 2007. And the Committee will continue to track its progress
24 and the information it develops.

25 In October, the Committee visited the West Valley site.

1 This visit provided an opportunity to understand the physical situation and
2 planned approaches to waste determinations and a site that has a number
3 of wastes that may require such determinations.

4 In November, a Committee staff member and I attended
5 a public scoping meeting for the Standard Review Plan to obtain a current
6 understanding of staff's plan forward concerning the development of the
7 Standard Review Plan for waste determinations and a better
8 understanding of stakeholder views.

9 The Committee used information from the activities I have
10 described as a basis for preparing a letter to you concerning preparation
11 of the Standard Review Plan. The letter was issued in December of 2005.
12 On the next two slides, I will summarize the recommendations in this letter.

13 Next slide, please. By way of introduction, there are three
14 sets of similar but not identical waste determination criteria: Section 31.16
15 of the National Defense Authorization Act of 2005, DOE Order 435.1 and
16 its associated manual and guidance, and criteria promulgated by the
17 Nuclear Regulatory Commission for use by the West Valley demonstration
18 project.

19 The Committee believes that similar criteria should be
20 subject to a consistent risk-informed interpretation. This requires that
21 criteria be addressed in a single integrated Standard Review Plan.

22 Some examples of the similar criteria are removal of key
23 radionuclides or highly radioactive radionuclides, and radionuclide removal
24 to the maximum extent practical or to the maximum extent practical with
25 economic and social considerations being taken into account and that

1 doses be ALARA.

2 We also believe that 10 CFR 61, Subpart C should be
3 used as the source for performance objectives unless there is a strong
4 justification that an alternative set of objectives is equally protective.

5 We also note that closing large underground tanks is
6 similar to decommissioning many sites because it must be accomplished
7 in the context of risk from nearby tanks or from previous releases to the
8 environment.

9 We believe that a risk-informed review of waste
10 determinations means that this context should be considered when
11 evaluating whether the Department of Energy's approach removes
12 radionuclides to the maximum extent practical and that doses and actions
13 are as low as reasonably achievable.

14 Next slide, please.

15 COMMISSIONER McGAFFIGAN: Mr. Chairman, this is
16 truly a clarifying question. I know there is always some doubt. I read that
17 in December. Could you just clarify? Which way do you see that cutting?
18 Does that mean that if everything else around it is contaminated, that you
19 can do a little bit less or does it mean that if everything else around it is
20 contaminated, you should do even more? You talked in tongues as far as
21 I am --

22 MR. CROFF: It may possibly cut either way. You're
23 exactly right. The situation in these tank farms that I normally think about
24 are have there been releases of substantial amounts of radioactivity to the
25 environment beneath and around the tanks.

1 And a consideration in the staff's decision should be
2 whether continuing to reduce what is in the tank makes sense in the
3 context of what is out of the tank. And it may indicate somewhat less, but
4 it is one factor amongst many to be followed.

5 COMMISSIONER McGAFFIGAN: Okay.

6 MR. CROFF: I would not want to imply that it is the factor.

7 I'm on slide 25, I hope. Yes. The capabilities of
8 technologies for removing radionuclides from tanks and for stabilizing
9 these radionuclides are likely to improve over the many years the
10 Department of Energy will be remediating its tanks.

11 The Committee believes that the Standard Review Plan
12 and staff should anticipate such improvements will occur and should
13 expect the Department of Energy to take risk-informed advantage of them.
14 Improvements in technology also means that staff will have to maintain
15 awareness of technology capabilities and improvements on a continuing
16 basis.

17 The Committee believes that the Standard Review Plan
18 should encourage that DOE's approach to the performance assessments
19 underlying DOE's waste determinations be risk-informed. This means the
20 Standard Review Plan should expect the Department of Energy's
21 performance assessment will be probabilistic and include an associated
22 uncertainty analysis or strong justification for any other approach and be
23 based on realism in establishing important assumptions that cannot be
24 validated.

25 Regarding monitoring, the Committee believes the

1 Standard Review Plan should expect the Department of Energy's waste
2 determinations to describe monitoring provisions that are adequate for the
3 Nuclear Regulatory Commission and the host state to fulfill their
4 responsibilities.

5 A minimal expectation should be standard environmental
6 monitoring plus state-of-the-art anticipatory monitoring of engineered
7 barriers. The preferred expectation would be the minimum coupled with
8 a performance confirmation program. And we would note that the NRC
9 staff needs to evaluate the adequacy of monitoring beginning with facility
10 design to allow the monitoring to occur.

11 Finally, the Standard Review Plan should be consistent
12 with and capitalize on existing risk-informed regulations and guidance that
13 address similar situations.

14 Next slide, please.

15 COMMISSIONER MERRIFIELD: The second bullet,
16 "Encourage risk-informed performance assessment by DOE," I take it that
17 it's your view, then, that they aren't there?

18 MR. CROFF: We have not looked at what DOE is doing.
19 We are addressing here what the staff should require in the Standard
20 Review Plan.

21 COMMISSIONER MERRIFIELD: Okay. Thank you.

22 MR. CROFF: Slide 26, I hope. Yes. Looking forward, the
23 Committee's emphasis will be on reviewing a draft of the Standard Review
24 Plan for waste determinations when it becomes available and later
25 reviewing how staff have resolved comments leading to the final Standard

1 Review Plan.

2 The Committee also plans on maintaining familiarity with
3 the status of technologies to meet the second objective I stated at the
4 beginning of my remarks. One important component of this is to organize
5 a working group meeting on predicting the performance of cement barriers
6 used in waste management applications in conjunction with the Office of
7 Nuclear Regulatory Research.

8 After the Standard Review Plan is completed, the
9 Committee plans to review its implementation in representative cases.
10 And this will probably occur in fiscal year 2007.

11 Finally, we'll maintain our readiness to undertake any
12 other activities related to waste determinations that you might request.

13 With that, next, Dr. Jim Clarke will talk about
14 decommissioning.

15 DR. CLARKE: Good afternoon, Chairman Diaz and
16 Commissioners. With respect to decommissioning, the committee has
17 been working in two areas: the proposed revisions to the
18 decommissioning guidance under the license determination rule and the
19 West Valley demonstration project decommissioning activity.

20 During the October briefing, as Dr. Ryan mentioned, we
21 had reported to you on our activities in the first area, proposed revisions
22 to the guidance. I will briefly summarize our work there, report to you on
23 our activities concerning the West Valley site, and conclude with future
24 activities in decommissioning.

25 May I have the next slide, please. As Dr. Ryan reported,

1 the Committee attended the staff decommissioning workshop in April last
2 year and conducted a working group session in June with participation
3 from five invited experts. This led to our August 2005 letter to the
4 Commission, in which the following recommendations were made.

5 May I have the next slide? Now, the Committee was
6 asked to consider the merits of partial restricted release and had
7 commented earlier on intentional soil mixing. In both cases, the
8 Committee believes that site-specific factors will be important and
9 recommends a case-by-case approach.

10 Two options will be available for sites needing legally
11 enforceable and durable institutional controls, a long-term control license,
12 and a legal agreement, restrictive covenant, which provides an alternative
13 to the licensee, both of which will be enforced by the Nuclear Regulatory
14 Commission. The staff indicated a preference for a long-term control
15 license. The Committee concurs with that preference.

16 The Committee also learned that the staff was considering
17 expanded guidance with respect to engineered barriers and was asked to
18 comment on the needed breadth and depth of that guidance. The
19 committee believes that the breadth and depth of the guidance should be
20 sufficient to provide a risk-informed decision and encourages the
21 expanded guidance.

22 The Committee also learned the guidance concerning
23 alternative exposure scenarios linked to future land use was being
24 developed and agreed that alternatives to the resident farmer scenario
25 would be important to the decommissioning component sites. The

1 Committee considers use of the resident farmer scenario especially useful
2 when it is used within the context of the screening tool.

3 Finally, the Committee appreciates that lessons learned
4 from past decommissioning efforts will be valuable not only to future
5 decommissioning efforts but to future facility designs as well and
6 recommended that the staff also devise a process to evaluate the quality
7 and the reliability of the information that will be disseminated.

8 Can I have the next slide. With respect to West Valley,
9 the committee held a working group meeting on the West Valley
10 decommissioning this past October at a location close to the West Valley
11 site.

12 The purpose of the meeting was to receive an update on
13 the status of decommissioning activities, to learn about the approaches
14 that the Department of Energy and the Nuclear Regulatory Commission
15 were taking in their respective performance assessments, and to hear
16 from interested stakeholders. Three invited experts participated in this
17 meeting, and several stakeholders attended as well.

18 May I have the next slide. Major observations and
19 recommendations the Committee has on West Valley are shown on this
20 slide. The Committee believes the West Valley site is a useful model for
21 the decommissioning of complex sites. This site presents several
22 complexities with respect to ownership and responsibility, types and
23 magnitude of sources, subsurface geology and subsurface transport, and
24 ongoing erosion.

25 The staff is doing a probabilistic performance assessment.

1 And the Committee believes that will enable risk-informed review. Erosion
2 is occurring adjacent to buried waste. Consequently, erosion modeling
3 and analysis will be critical to remedial decision-making.

4 And, finally, the Committee recommends that subsurface
5 characterization data be used to verify groundwater modeling. And, if I
6 might add, as Dr. Ryan mentioned, the Committee believes that in both the
7 proposed guidance revisions and the West Valley site decommissioning,
8 our early involvement is very much appreciated and has been very
9 beneficial to our deliberations.

10 Let me have the next slide.

11 COMMISSIONER MERRIFIELD: Yes. I'm sorry. Can I
12 get a clarification regarding slide 32? You said the West Valley site
13 provides a useful model for the decommissioning of complex sites. Is that
14 meant as an endorsement of ACNW as to the activities that are going on
15 up there or is it merely to say that it's useful as an information source, both
16 positive and negative?

17 DR. CLARKE: Thank you for that question.

18 Our intent here is that the West Valley site presents just
19 about everything you're going to run into on the decommissioning of the
20 complex sites: soil contamination, groundwater contamination, tanks,
21 buildings, spent fuel. It's a site that --

22 COMMISSIONER McGAFFIGAN: Divided regulatory
23 authority, warring --

24 COMMISSIONER MERRIFIELD: And this is truly a
25 clarifying question. So there may well be things going on at West Valley

1 that you wouldn't necessarily recommend to the Commission that we
2 replicate?

3 DR. CLARKE: Right.

4 COMMISSIONER MERRIFIELD: Is that a fair
5 assessment?

6 DR. CLARKE: That is not the intent.

7 COMMISSIONER MERRIFIELD: Okay. One wouldn't
8 necessarily get that from the words on the papers.

9 DR. CLARKE: Thank you.

10 COMMISSIONER MERRIFIELD: Thank you, Mr.
11 Chairman.

12 DR. CLARKE: With respect to future activities, the
13 Committee is planning a follow-up working group meeting concerning the
14 decommissioning guidance revisions that have been proposed and the
15 staff's analysis of the comments that have been received.

16 The Committee is planning a working group meeting on
17 modeling and modeling interface with the Office of Nuclear Regulatory
18 Research, as Dr. Ryan indicated. This meeting will focus on using
19 monitoring data to build model confidence for performance assessment,
20 performance confirmation, as well as compliance.

21 Also, as Dr. Ryan indicated, we are looking forward to a
22 follow-up working group meeting on West Valley when the performance
23 assessments are available.

24 That concludes my remarks. And now I would like to turn
25 the presentation to Dr. Hinze.

1 DR. HINZE: Thank you, Dr. Clarke. Gentlemen, this
2 afternoon the Committee is reporting on its recent observations and
3 recommendations regarding potential risks from igneous activity as the
4 proposed Yucca Mountain repository. Our recommendations emphasize
5 enhancing realism and making the analysis more risk-informed.

6 Next slide, please. The current status of the investigations
7 into the effect of igneous activity and related volcanism at the proposed
8 repository is, the potential for volcanism is, not screened out as a very
9 unlikely event and, thus, must be evaluated.

10 Further, volcanism potentially is a significant contributor
11 to dose to the recently maximally exposed individual during the first few
12 thousand years of the life of the repository.

13 We also note that significant progress has been made by
14 the staff in developing and analyzing volcanic scenarios and the technical
15 aspects of these scenarios and their consequences, but differences in
16 views that are based on professional judgment remain.

17 Next slide, please. In terms of our recent activities over
18 the past several months with regard to igneous activity at Yucca Mountain,
19 first of all, as Dr. Weiner has indicated, igneous activity was a critical topic
20 of discussion during the visit to the Center for Nuclear Waste Regulatory
21 Analysis in April. This led to the identification by the Committee of several
22 questions of concern to it. These have been the subject of continued
23 discussion with the NMSS and the review of recently released documents
24 of the staff and the Center. Representatives of the Committee have also
25 monitored the activities of the DOE and its probabilistic volcanic hazard

1 analysis update.

2 Last month the Committee did prepare and sent a letter
3 report on igneous activity, which is the basis for this report this afternoon.
4 There were three major topics of that letter indicating our major concerns
5 and interests: first, an alternative realistic scenario involving the
6 interaction between the intruding magma and the repository; second, the
7 exposure scenario describing the impact of contaminated volcanic ash on
8 dose to the reasonably maximally exposed individual; and, finally, the
9 probability of a volcanic event intersecting the proposed repository.

10 Next slide, please. Information that has been received
11 and evaluated by the Committee suggests that an alternative scenario to
12 those considered by the staff is likely to lead to rapid solidification of
13 magma in the drifts of the repository, with associated modifications of the
14 resulting consequences of volcanic activity.

15 Rapid solidification is really a common volcanic scenario,
16 especially in magma high in water content, like the Yucca Mountain
17 magmas, and is illustrated in this photograph of tree casks from Hawaii of
18 the clenched magma surrounding the trees after the flow of lava through
19 a forest.

20 Next slide, please. Consideration of this likely alternative
21 scenario is significant because, one, the waste packages interacting with
22 intruding magma may not fail as currently assumed by both the
23 Department of Energy and the Nuclear Regulatory Commission because
24 of the protective effects of the solidified magma and also the lower
25 temperatures of the magma.

1 Secondly, waste that has been released into drifts from
2 corroded casks may be protected to some degree by quenched rind of
3 magma.

4 Third, the magma flowing into the tunnels is unlikely to
5 travel a significant distance into the tunnel and, thus, is unlikely to disturb
6 a large number of waste canisters.

7 And, fourth, because the magma is unlikely to flow a
8 significant distance into the drift of the repository, the intruding magma is
9 unlikely to produce secondary vents, flag vents, which could carry waste
10 from the drifts to the surface.

11 Furthermore, the NRC staff approach may lead to undue
12 conservative assessments, rather than a more realistic view of the effects
13 of intruding magma, leading to misperceptions and perhaps even
14 concealment of attributes of processes that should be investigated
15 because they haven't been investigated because they're not important.

16 Next slide, please. The Committee recommends that the
17 staff address the likely rapid solidification of magma in tunnels and on
18 waste containers and analyze its impact on the consequences of a
19 potential igneous event.

20 Next slide, please. The Committee after rather intensive
21 review of the analysis of the exposure scenario by the staff finds that
22 significant progress has been made by the staff in the analysis of the
23 exposure to the reasonably maximally exposed individual from
24 contaminated ash; and, secondly, that the health physics assumptions
25 regarding dose are reasonable.

1 But the Committee recommends that risk-significant
2 parameters, processes, and assumptions used in the exposure scenario
3 be justified, integrated, and documented, well-documented.

4 Next slide, please. The Committee continues to urge that
5 a risk-informed approach be used in the analysis of the probability of an
6 igneous event intersecting the repository by considering a range of
7 probability values, rather than a single value that is currently being used
8 by the Nuclear Regulatory Commission.

9 Alternatively, the staff should document how a single
10 value estimate, as they are currently using, supports a risk-informed
11 review and its consequences.

12 In terms of path forward, the Committee plans to continue
13 to interact on igneous activity consequence issues with the staff -- and we
14 have had excellent interaction -- and to review and comment on igneous
15 activity consequence reports as they are issued.

16 And, with that and your questions, I will turn it back to
17 Chairman Ryan.

18 DR. RYAN: Mr. Chairman, we would be happy to have
19 your questions and comments.

20 CHAIRMAN DIAZ: All right. Thank you so very much.
21 That was very quick, sequential, and well-orchestrated volcanic activity.

22 (Laughter.)

23 CHAIRMAN DIAZ: Commissioner McGaffigan?

24 COMMISSIONER McGAFFIGAN: I did not observe rapid
25 solidification. Thank you.

1 (Laughter.)

2 COMMISSIONER McGAFFIGAN: Thank you, Mr.
3 Chairman.

4 I'll start with Dr. Hinze, and I am not going to spend a lot
5 of time with you except to say I think what I read in your letter report is the
6 best thing that I have read about igneous activity since I have been here.

7 I know the Chairman was largely responsible for asking
8 you to take a look at that area because we were frustrated with some of
9 the stuff that we were seeing being written, including by our own staff.
10 And I think you have done a real service there, but I assume other
11 Commissioners are going to probe that more than me. So I'll leave that
12 with just that comment.

13 DR. RYAN: Commissioner McGaffigan, I'd like to also
14 recognize the staff for their close cooperation on issues where there were
15 differing views. And it was a very professional interaction. And I think I
16 am pleased to hear the work product represents that, but I do want to
17 recognize the staff who worked on the issues with us for being
18 cooperative, collaborative, and in spite of differing views, wrestling to the
19 end of the road.

20 COMMISSIONER McGAFFIGAN: Thank you.

21 DR. RYAN: Thank you.

22 COMMISSIONER McGAFFIGAN: I'm going to I guess go
23 to Mr. Croff. In the paper that you sent us about the Standard Review
24 Plan, there's a statement that I have a little bit of problem with. And that's
25 that there is a growing body of literature-setting experience which raises

1 concerns about the reliability of such institutional controls.

2 And, we're going to use institutional controls. The
3 Environmental Protection Agency uses institutional controls. Department
4 of Energy I think I've seen documents which use the term "perpetual
5 institutional controls." Perpetual is a long time, but probably, by the time
6 the sun encompasses the Earth, I guess is what they're talking about or
7 humans cease to exist or whatever.

8 I understand there are difficulties with institutional controls,
9 but don't we have to make them work? You know, don't we have no
10 alternative at some of these complex sites but to have something that will
11 essentially have to last a very, very long time?

12 MR. CROFF: I would certainly agree that institutional
13 controls are going to have to be used and every attempt should be made
14 to make them last as long as they can. However, the intended implication
15 of that statement is that when doing performance assessments and
16 making decisions, that one shouldn't assume they will last forever but
17 assume they will last for a reasonable time and then at that point assess
18 the consequences and the risks of if they were to failure determine can
19 this material be left there or should additional removal efforts be
20 undertaken.

21 COMMISSIONER McGAFFIGAN: You know, aside from
22 a place like West Valley, that probably isn't that big a deal for us, but for
23 the Department of Energy and the half-life of some chemicals that the
24 Environmental Protection Agency deals with is infinite.

25 So I don't know. I am familiar with some of the literature.

1 It seems to me there is sort of a defeatism there, you know, because the
2 Egyptians didn't put institutional controls into effect at some facility and,
3 therefore, they don't exist anymore, you know, they couldn't possibly exist
4 for a long time. I think civilization has to some degree advanced. And I
5 hope it has. Certainly information technology has.

6 And if we can keep compatibility between CDs and DVDs
7 and whatever is going to replace them, you know, HD DVDs and as time
8 goes forward, hopefully some future civilization would still know that this
9 place requires institutional controls.

10 Just speaking as one Commissioner, I just have a sense
11 that there is a certain defeatism that pervades some of the literature here.
12 And I take that, go at it from a sort of practical view. And it is one I've seen
13 reflected in legislation. We sort of have to make these controls work, and
14 we have to make the best effort to make them work.

15 CHAIRMAN DIAZ: I tend to agree with Commissioner
16 McGaffigan. In fact, some of us have really been thinking that there is
17 going to be a time in which we need to seriously revisit the issue of how
18 we establish institutional controls for specific periods of time, rather than
19 perpetual, that the technology probably exists and if not, is soon to exist
20 that would allow us to really establish institutional controls for very specific
21 site characteristics of waste and that that might be an option that we need
22 to revisit.

23 I'm sorry, but I certainly --

24 COMMISSIONER McGAFFIGAN: Let me go to another
25 sentence.

1 COMMISSIONER MERRIFIELD: Not to use your time, I
2 concur.

3 COMMISSIONER McGAFFIGAN: Let me go to another
4 sentence. "The staff should expect DOE to have considered existing
5 relevant technologies" -- and this is part where it's reflected in one of your
6 slides -- "or technologies being developed by domestic and international
7 organizations."

8 How far developed do you mean? I mean, if it's the gleam
9 in the eye of somebody at Sandia, not to pick on Dr. Weiner, that may or
10 may not prove to be possible, isn't that a prescription for delaying cleanup
11 needlessly?

12 You know, if it's well-developed, all but on the market,
13 you're pretty darn sure it's going to work, then I can understand it. But the
14 words could lend themselves to either interpretation.

15 MR. CROFF: My mindset was using it in the sense of
16 engineering development, meaning the technology would have to be well
17 along, you know, perhaps not demonstrated at a large scale, but certainly
18 I don't see much of it in the fundamental research stage that's, say,
19 coming to fruition in an adequate time.

20 COMMISSIONER McGAFFIGAN: I will point out that in
21 DOE space, occasionally, things grow by a factor of four, even when
22 they're being developed. I mean, look at the MOX facility and the cost of
23 the MOX facility in the recent DOE IG report. It has more than tripled in
24 the last five years for a variety of reasons that we don't have to go into
25 today. So sometimes, even if they're in engineering development, the cost

1 is not necessarily under very good control.

2 So I just hope that you're careful there is all I'm saying.

3 And it sounds like you intended to be careful. I would have loved to -- you
4 know, technology is well into engineering development. You have done
5 the clarification that I was seeking.

6 One issue that you don't have on your agenda -- and I
7 guess this is for Dr. Ryan -- that at least some of us are thinking about --
8 and perhaps Commissioner Merrifield will follow -- we postponed a Part 41
9 rulemaking dealing with in-situ leach facilities several years ago, when the
10 price of yellow cake was less than \$10 a pound. The last time I checked,
11 it was approaching \$40 a pound.

12 And the industry probably can afford us to do that
13 rulemaking now, and there is some need to do that rulemaking because
14 we continue to try to regulate the ISL facilities using Part 40 -- and we can
15 do it -- guidance documents, but it was clearly not designed for in-situ
16 leach facilities.

17 So you may find that as we review that, some of us may
18 say that -- and this is one Commissioner talking. I'm not trying to -- where
19 there is a process for us voting on your paper, but you may find some of
20 us saying that Part 41 needs a little bit of attention, --

21 DR. RYAN: One of things we have done --

22 COMMISSIONER McGAFFIGAN: -- Part 41, which
23 doesn't exist yet. It may not need it in this current fiscal year, but it may be
24 something that we want you involved in as we move forward.

25 DR. RYAN: Thank you.

1 One of the things that we worked very hard over this year,
2 recognizing the schedule delays in Yucca Mountain, as we have actually
3 shifted our focus on the action plan as well as our resources to support
4 other areas within materials. And we'll certainly be prepared to support
5 any direction you might want to give us for Part 41.

6 COMMISSIONER McGAFFIGAN: Thank you.

7 Mr. Chairman, my time has expired.

8 CHAIRMAN DIAZ: Commissioner Merrifield.

9 COMMISSIONER MERRIFIELD: Based on that opening
10 and following up with Commissioner McGaffigan, he is right. I do want to
11 comment on that. Having taken quite a hard look at those issues recently
12 with in-situ leach facilities, it strikes me that when we entered into our
13 program to try to regulate those, we had authorities under UMTRCA that
14 really came through a legislative regime really flowing from the Solid
15 Waste Disposal Act. Subsequently, after we had moved forward on that,
16 Congress passed legislation relative to underground injection well
17 programs.

18 And I think, at least in my own eyes, looking at those two
19 regimes, I think if we have the underground injection authorities at the time
20 in which we're crafting the regulatory framework for in-situ leach mining,
21 in my personal opinion, it would be more like an underground injection
22 program vice treating it as something under UMTRCA.

23 But I do think, as I agree with Commissioner McGaffigan,
24 I think that may be something you may want to have on your radar screen
25 because the Commission may well decide it needs some further attention

1 to that particular issue.

2 The only footnote I would make, perhaps disagreeing with
3 Commissioner McGaffigan, there are only one or two entities right now
4 that are undertaking that type of technology. There's a whole lot of people
5 who may want to enter that. And I think our fee framework, which would
6 place the burden of paying for that regulation on the few folks now to
7 benefit a whole lot of folks who may be interested in this market because
8 of the rise in the price of uranium, I'm not certain, in equitable fairness, that
9 that is where I would be but –

10 COMMISSIONER McGAFFIGAN: We can always work
11 on that.

12 COMMISSIONER MERRIFIELD: -- that is something that
13 the Commission could certainly --

14 COMMISSIONER McGAFFIGAN: We can decide as a
15 matter of policy --

16 COMMISSIONER MERRIFIELD: Right.

17 COMMISSIONER McGAFFIGAN: -- that fees are not
18 going to go to the current licensees but in the overhead.

19 COMMISSIONER MERRIFIELD: Right. And that is
20 something that we can actively consider, all five of us.

21 COMMISSIONER JACZKO: If I could just add to this, too,
22 because this is something I know we have all discussed? There was an
23 article yesterday talking about the rush of people in Utah to actively
24 investigate potential uranium resources there.

25 COMMISSIONER McGAFFIGAN: I think Nevada, too.

1 COMMISSIONER JACZKO: And Nevada perhaps as
2 well. So it certainly is an area that I think there is a lot of activity.

3 COMMISSIONER MERRIFIELD: Dr. Ryan, turning to the
4 presentation you did make, I want to compliment you. I did not have the
5 chance to go through your white paper in great detail. I have a little note
6 to myself to take it home for my home reading.

7 But it certainly in terms of reviewing it more briefly, I do
8 think it was a thorough look at this. And so I look forward to reviewing it.

9 That having been said, I sort of hear you in terms of
10 wanting to make that program more risk-informed. To me in the short
11 term, it would seem we need to focus on some of the guidance issues to
12 get more of an immediate benefit for ourselves and the licensee.

13 There may be in the long term some major changes that
14 we could think about making to Part 61. Those do come at a cost. And
15 as we have reflected on the costs associated with in-situ leach facilities,
16 again, I think who pays for that and does it meet the cost-benefit ratio is
17 one I think you all need to be mindful of.

18 I think in a lot of the risk-informed areas, there's a lot of
19 things if we had infinite amounts of money we would like to do but
20 recognize we don't. And, therefore, we've got to pick and choose what
21 makes the most sense and gives us the biggest bang for the buck.

22 So it's really more of a comment on my part.

23 DR. RYAN: Just a quick thought. And I appreciate your
24 comment and thank you. I couldn't agree with you more. I think there is
25 a lot of opportunity to do a lot in even more basic areas of license

1 conditions and specific case analyses as well as the guidance area that
2 could do a lot.

3 And that's why we structured our letter to you trying to
4 identify some of that low-hanging fruit, some of those opportunities that
5 could be dealt with in those simpler ways, rather than, you know, a more
6 global program.

7 So we agree with you. And, in fact, our efforts now are
8 focused on trying to further identify; clarify; and, in fact, prioritize with
9 consultation with the staff on where those basic opportunities might be.

10 COMMISSIONER MERRIFIELD: Another issue on your
11 slides, in slide nine, you talk about OSHA and the work you did in
12 analyzing where they want to go. I asked the question, the clarifying
13 question, had you disseminated that to other folks? You had given it
14 obviously to the Commission.

15 I think one of the things that we as a Commission may
16 wish to think about is whether we want to encourage you to perhaps
17 provide a wider dissemination of that information to help other
18 decision-makers in the government who are involved in this to get a better
19 understanding of the technical issues because I think in my view, you
20 made some very important findings, which have a critical impact on many
21 of our licensees.

22 I think our counterparts, whether it's in the Department of
23 Labor or otherwise, should be made aware of those very same findings.

24 COMMISSIONER McGAFFIGAN: Mr. Chairman, if I
25 could, I agree, but I also think that the thought occurred to me as I was

1 listening to the discussion, did we comment on the OSHA RFI? Because
2 we could at least say, you know, with the part that you leave out, I know
3 I have said it in --

4 COMMISSIONER MERRIFIELD: I believe we're getting
5 a Marty Virgilio head nod. I believe we did, for the purposes of the record.
6 It could well be that we may wish to supplement that in some way if need
7 be.

8 DR. RYAN: Commissioner, we would be happy to take
9 this back up and move it forward in any way that is effective for the
10 Commission or, in fact, expand our study and look at any additional
11 questions.

12 And I'll take Commissioner McGaffigan's question on the
13 ancient history of ICRP-2 and others and look at those in more detail. And
14 we'll be happy to take your direction on how to move forward.

15 COMMISSIONER MERRIFIELD: Mr. Virgilio has just
16 pointed out Mr. Cool. He's the person who knows all there is to know
17 about OSHA.

18 DR. RYAN: Yes, he is.

19 COMMISSIONER MERRIFIELD: I'll do one last brief one.
20 I would say I agree with Commissioner McGaffigan, Dr. Hinze, on your
21 comments relative to igneous activity. I thought that was very helpful,
22 certainly did raise the bar in terms of our understanding of these issues.

23 And I need not have your comments on that, and certainly
24 we'll leave, as he said, others to perhaps ask more detailed questions. But
25 thank you.

1 DR. HINZE: Thank you. As Chairman Ryan has
2 indicated, there were a lot of people involved in trying to make this really
3 come out and be the right thing. And we had the cooperation of the staff
4 and of our ACNW staff as well as the Committee.

5 CHAIRMAN DIAZ: Thank you. Commissioner Jaczko.

6 COMMISSIONER JACZKO: I wanted to try and ask
7 questions on three different topics. We'll see how far I get. The first one
8 is, as Commissioner Merrifield said, I had a little note on the white paper
9 on low-level waste to supplement my bedtime reading with that paper. I've
10 gotten through a little bit of it, I must say.

11 MR. CROFF: It's not that long.

12 (Laughter.)

13 COMMISSIONER JACZKO: Unfortunately, my bedtime
14 reading is, unfortunately, somewhat long.

15 COMMISSIONER McGAFFIGAN: It also may tell you the
16 sleep-inducing nature of that.

17 COMMISSIONER JACZKO: I won't say the extent of time
18 that I've read each section, but one of the things that I think happened at
19 the meeting last year, where we talked about this issue -- and one of the
20 reasons that prompted me at that time to talk about it was the pending
21 situation with Barnwell and what will happen potentially there. I think in
22 mid 2008, they're scheduled to no longer receive B&C waste from out of
23 compact states.

24 While I did think that the white paper was a very good
25 review of kind of how we got to where we are, one of the things that I think

1 would be helpful, too, is how potentially we deal with some of those
2 pending issues. For instance, what will the situation be?

3 One of the things that I think you highlighted very
4 prominently in the report is the fact that most of the effort so far to
5 stimulate new development of low-level waste sites have failed. And we
6 may find ourselves in a situation -- I don't want to speculate on the time
7 frame -- where we may need to somehow develop new sites and what the
8 right ways are to get those.

9 While some of those -- certainly the development aspect
10 is certainly beyond the NRC scope, certainly I think it would be helpful to
11 have your perspective or the Committee's perspective on how to deal with
12 some of those issues and what may come out of that so that we're
13 prepared from a regulatory standpoint to deal with the scenarios that
14 develop. So that is perhaps one thing that I think would be helpful in that
15 as well.

16 The next topic I want to touch on quickly is the waste
17 incidental to processing. And I never miss an opportunity to give people
18 more work when they request it. And I think, as you said there at the end
19 of your slide, Dr. Croff talked about other activities, as requested by the
20 Commission.

21 I will first ask this in the form of a question and then
22 perhaps make a recommendation of my view. One of the things that has
23 recently been released is the staff's technical evaluation report on the salt
24 waste determination.

25 I'm wondering, did you have an opportunity to review that

1 report or --

2 MR. CROFF: No. No, we did not review that.

3 COMMISSIONER JACZKO: In the future, is this
4 something that you think the Committee would be able to review? I mean,
5 certainly a lot of the issues that you raised in your letter on the Standard
6 Review Plan I think apply equally to those reviews that are happening
7 before we get the Standard Review Plan in place.

8 MR. CROFF: At this point, your direction has been to
9 focus on the Standard Review Plan. So that's what the action plan does.
10 We would certainly be able to review these more specific documents if you
11 should so direct, yes.

12 COMMISSIONER JACZKO: Certainly I think from my
13 perspective I think that would be very helpful for us. Since you hadn't had
14 an opportunity to review it, I will perhaps give you an opportunity now.

15 (Laughter.)

16 COMMISSIONER JACZKO: There are a couple of issues
17 that I did notice as I was going through it. And some of these, again, get
18 to issues that Commissioner McGaffigan raised about institutional controls.

19 I think the staff's recommendation in that report was
20 essentially that if -- I think there was a list of about 12 different criteria --
21 those criteria were complied with, or those assumptions were valid -- I think
22 they are assumptions, not criteria -- those assumptions were valid, it would
23 be the staff's position, then, that this waste determination would comply
24 with the provisions of the Defense Authorization Act for this particular
25 determination.

1 One of the criterion there is that the institutional controls
2 I think would be valid for 100 years. So I'll just ask you, I guess, that
3 question. When you talked about institutional controls, I think you
4 mentioned the term is a relatively long term. Is 100 years in that time
5 frame or do you think that is a good time frame to be looking at?

6 DR. RYAN: Commissioner Jaczko, one clarifying point.
7 Our interest would be focused on the technical and technological
8 durability, not financial instruments or other legal or other controlling
9 issues that might also be asked in that same framework.

10 So, with that, I think, Allen, take it away.

11 MR. CROFF: With that I step into the pit, yes. First let me
12 reemphasize that the language in our letter and in my answer here is
13 related to the assumption of the duration of institutional control for the
14 purpose of doing a performance assessment.

15 It is not necessarily what you would try to do or when you
16 would say it would end, but where should you assume it fails and see what
17 the consequences are?

18 I believe 100 years is a reasonable number. I think it's
19 within the framework of reasonableness, at least. I have not done, nor
20 have I seen an exhaustive review of how well we have done, say, in the
21 last 50 years, you know, what has failed, how many have worked, how
22 many have not. That may be there. I haven't seen it yet. But 100 to me
23 personally, appears to be about right.

24 COMMISSIONER JACZKO: As I said, I think one of the
25 things and certainly I think in the future, it would certainly be helpful to

1 have the Committee review these.

2 One of the others issues that's in there -- and I won't ask
3 for your comment on this one -- is certainly there are a lot of modeling
4 issues and modeling assumptions that have gone on.

5 And the staff makes a point that some of the modeling
6 that is produced by the DOE for this particular determination does not
7 show compliance with Part 61, but if more realistic modeling was
8 developed, that would, in fact, show compliance with the performance
9 objectives of Part 61.

10 So I think certainly having your take on some of those
11 kinds of issues and having a better understanding of where that is going
12 to go I think is important.

13 And I'll wait for the others if we have another round.

14 CHAIRMAN DIAZ: Okay. All right. Commissioner Lyons.

15 COMMISSIONER LYONS: Well, let me start by thanking
16 the Committee. I very much appreciate the work you do, the caliber of the
17 work you do, and the report today.

18 I was going to start out talking about the white paper on
19 low-level rad waste. And two of my fellow Commissioners have already
20 beat me to it.

21 I also have not read the report. I read the letter summary.
22 It also is in my stack of bedtime reading. And I do intend to wade through
23 it.

24 I think the point that Commissioner Merrifield made about
25 how from the Commission perspective we'll need to evaluate where to put

1 the resources in this particular area, I was also going to make comments
2 very similar to that.

3 I have interacted with several of you on this question of
4 low-level rad waste. And it's one that I have worried about a lot, as
5 Commissioner Jaczko mentioned, particularly with the potential concerns
6 coming in 2008. So it is an area that I am very interested in, but I do look
7 forward to reading your report and probably getting back to you with
8 questions after that.

9 DR. RYAN: Thank you.

10 COMMISSIONER LYONS: A question on, Mike, in your
11 discussion, you talked about ICRP. You talked about BEIR VII.

12 DR. RYAN: Yes.

13 COMMISSIONER LYONS: There has been another major
14 report in the last year from the French Academy, which came to I would
15 say diametrically opposite conclusions than BEIR VII. And I was curious
16 whether the Committee had considered an evaluation of the French work,
17 perhaps a comparison of the French work, and BEIR VII, perhaps
18 considerations of why they have come to such different conclusions.

19 But just, in general, have you looked at the French report
20 yet and started into that at all?

21 DR. RYAN: I personally read it. I have not studied it. But
22 we could certainly take up a comparison of that international work and
23 integrate it into our thinking and advise you of our view on it. We have
24 certainly not taken it up as a Committee.

25 COMMISSIONER LYONS: At least, from my perspective,

1 I think that could be very, very interesting because you do have two very,
2 very well-known research bodies coming up with very different
3 conclusions. And in my mind, that probably means there are some pretty
4 fertile grounds there for further study.

5 COMMISSIONER McGAFFIGAN: From the same
6 database, which is always good.

7 COMMISSIONER LYONS: I'm sorry?

8 COMMISSIONER McGAFFIGAN: From the same
9 database. I mean, they're looking at the same literature.

10 COMMISSIONER LYONS: Well, actually, I think that will
11 be one of the things that comes out in a review, is that it's not the same
12 database, because BEIR VII very specifically did not consider the more
13 recent DOE research, which was, in fact, why Dr. Orbach with DOE has
14 expressed his concerns to BEIR VII, that they did not consider the more
15 recent DOE work.

16 I believe the French report did consider it, but, again, I'm
17 probably going further than I know on this report. And perhaps just
18 because we're having this discussion, this may be indicative of a reason
19 to look at it.

20 DR. RYAN: We can certainly take it up, Commissioner.
21 And, again, as I mentioned, where I'm trying to be mindful of all emerging
22 radiobiological research, both here and abroad, on some of these more
23 fundamental radiation biology questions as they will ultimately either
24 impact or not impact radiation protection requirements. So we'll certainly
25 take that up.

1 Thank you.

2 COMMISSIONER LYONS: Just a few comments on your
3 action plan. I don't disagree that Yucca Mountain should remain at the top
4 of your list and certainly remain in Tier I and be a continuing focus for
5 ACNW, but, as I think you emphasized in your comments, the plans for
6 Yucca Mountain, to say the least, are in a state of flux.

7 So I think what you do on Yucca Mountain is very much
8 going to be a moving target. And to the extent that over the next few
9 months it becomes a little bit more clear how DOE's thinking may be
10 evolving on this, this would tie in perhaps with their so-called Genie
11 initiative. There may be a number of changes coming which I think is
12 going to provide a rather broad plate of activities for you.

13 DR. RYAN: Indeed. And I think in our strategic planning
14 activities, we took up that exact question. And, in fact, in years past, most
15 of our resources were devoted to Yucca Mountain-related activities. And
16 this year there has been a rather significant shift. So that Yucca Mountain
17 is not even the majority of our resources. We have shifted much of our
18 resources to these other activities.

19 So we're very mindful of that. And Dr. Larkins and the
20 other staff folks have helped us very efficiently become reoriented and,
21 frankly, quite flexible based on how Yucca Mountain might shift. It's been
22 a rather intensive planning exercise to be ready to do that, but I believe we
23 are.

24 COMMISSIONER LYONS: You have the fuel cycle
25 facilities in Tier II. And already Commissioner McGaffigan and

1 Commissioner Merrifield have talked a little bit -- well, Commissioner
2 Jaczko, too -- on increased interest in ISL mining.

3 And I think the comments that were made by my fellow
4 Commissioners on the need to re-look at some of the regulations in that
5 area would be time very well spent.

6 DR. RYAN: And if you see that they rise to a Tier I
7 activity. We'd sure appreciate that clear guidance because we can
8 certainly adjust. And that's obviously the reason for the review cycle. So
9 we will be happy to respond as you prioritize for us.

10 COMMISSIONER LYONS: And then maybe one quick
11 comment and a few others when we come to the second round. I would
12 like to agree with Commissioner Jaczko that I think involving ACNW in
13 WIR reviews I think would be, in waste incidental to reprocessing reviews
14 I think would be, a very useful step.

15 Those are going to be very complex reviews, very
16 challenging to the staff, very important to the DOE, very important to the
17 country. And I think having ACNW's perspective on that could be very,
18 very useful.

19 DR. RYAN: Thank you. We'll be happy to help.

20 CHAIRMAN DIAZ: All right. Well, thank you very much.
21 I also want to express my appreciation the Committee. As I sit in here and
22 listen to my fellow Commissioners, I think we have concluded that you can
23 do a lot of work.

24 DR. RYAN: Yes. We try.

25 COMMISSIONER McGAFFIGAN: When you and I first

1 got here, they were entirely focused on Yucca Mountain, and I think we
2 have broadened their agenda. And I think it has been very useful to us to
3 have broadened your agenda.

4 CHAIRMAN DIAZ: Absolutely. I agree. I completely
5 agree.

6 DR. RYAN: Thank you.

7 CHAIRMAN DIAZ: And it has certainly been helpful to us.
8 And, as you take a look at other things, we are seeing that the panorama
9 keeps changing.

10 Let me try to come up with some of the issues that were
11 presented in your presentations. Dr. Ryan, in your cover letter, you refer
12 to the collection of environmental monitoring data, these require the
13 institutional control period, which goes back to some of the things that we
14 were talking about, and indicated that this data could be used to increase
15 confidence in long-term predictions of performance of low-level waste
16 facilities. What types of data do you think are --

17 DR. RYAN: Well, that's a great question. And it gets to
18 the working group I mentioned. For example, very often we think of taking
19 samples and measuring a concentration and determining that complies
20 with some license condition or requirement.

21 But at the same time, in that same monitoring, well, you
22 could put a rather inexpensive constant water level monitoring so you
23 could see water level going up and down.

24 There is an opportunity to enhance understanding of the
25 geohydrological environment in that case as well as demonstrating

1 compliance. And what we want to explore with the research group -- they
2 have indicated a lot of enthusiasm for this -- is where are the other
3 opportunities where we can make a measurement to demonstrate
4 compliance and also enhance through some other kind of measurement
5 or complementary measurement to increase our confidence in how that
6 system is fundamentally behaving. It gives you the ability to better
7 interpret whatever that microcuries per cc might be. Is it important? Is it
8 not important and so on?

9 And so I think there is an opportunity to increase
10 confidence as well as demonstrate compliance over time.

11 CHAIRMAN DIAZ: I totally agree. I think that this is an
12 area in which we always seem to be busy looking at the next model, but
13 the reality is that there is an entire set of capabilities of monitoring all of
14 those variables or not all, but the majority, of the variables that we need to
15 make actual useful predictions for both, both compliance and
16 performance. I think we talk about it and then we come back here.

17 I think that would be a very useful thing to do and take a
18 specific case and actually go and see what is it that we need to get the
19 information and how could that information be used for different types of
20 things, either whether we're going to do institutional controls, whether it's
21 a 100 years, or periods of times like that.

22 DR. RYAN: And, again, we're mindful of the priority that,
23 you know, some of those things could be very expensive, but some of
24 them may be very inexpensive and easy to use and we want to explore
25 that range of possibilities.

1 As you noted, we're across a wide range of disciplines
2 here. And I think we can all work with staff and try to identify where we
3 can make those enhancements that provide the best return on investment.

4 CHAIRMAN DIAZ: Okay. Dr. Weiner, from your review,
5 do you have one specific recommendation in which we should put
6 additional resources and research that would actually benefit the
7 Commission in making decisions?

8 DR. WEINER: At this time, I can't think of any specific
9 single recommendation. I think as these research programs progress --
10 and we have had just recently some presentations that I was not able to
11 cover in this meeting -- we will be making more specific recommendations.
12 But I can certainly appreciate your request with respect to that.

13 CHAIRMAN DIAZ: All right. Thank you.

14 Mr. Croff, one of the flexibilities this agency has is
15 contained in 61.58, which is alternative requirement for waste
16 classifications and characteristics.

17 Given the flexibility that is given to the Commission in this
18 rule, do you have any specific recommendations for alternative waste
19 classifications now that you have looked at it?

20 MR. CROFF: Wow.

21 COMMISSIONER JACZKO: You thought my question
22 was tough.

23 MR. CROFF: I would like to think about that.

24 CHAIRMAN DIAZ: How about you provide us a response
25 to that?

1 MR. CROFF: Okay. Thank you.

2 CHAIRMAN DIAZ: It is --

3 DR. RYAN: Mr. Chairman, I would be happy to offer you
4 my --

5 CHAIRMAN DIAZ: Okay. All right.

6 DR. RYAN: Upon request or its own initiative, the
7 Commission may authorize other provisions for the classification and
8 characteristics of waste and the specific basis if after evaluation of the
9 specific characteristics of the waste disposal site and method of disposal,
10 it finds reasonable assurance of compliance with the performance
11 objectives of part C, which are the principal dose protection requirements.

12 CHAIRMAN DIAZ: Right.

13 DR. RYAN: I think my own personal view is if you
14 maintain the risk-informing view of those things that will allow you to
15 demonstrate those dose performance goals in the regulation without
16 change, you have the ability to make alternate determinations on a
17 case-by-case basis or within guidance for specific generic kinds of cases.

18 So I think the opportunity exists. I recognize that 61 and
19 particularly the classification system it's in -- I believe it's 61.55 -- is now
20 about 30 years old from its inception. I think the final EIS was 82 and the
21 regulation thereafter. So a lot has changed in the kinds and types of
22 waste that have been developed in the broader use of the classification
23 system for WIR determinations.

24 There are many examples already in hand on how
25 alternate determinations have been made. For example, in irradiated

1 hardware from power plants, we have an averaging procedure that can
2 take like materials over a range that might even bridge class C. As long
3 as that package averages below class C, it's low-level waste.

4 So there are examples out there where guidance can be
5 offered. And I think going back to our letter and our follow-up with the staff
6 is to try and identify and work with their program to make sure we identify
7 the priorities that will best serve the Commission, the licensees, and do
8 this in a risk-informed way. That's a start.

9 CHAIRMAN DIAZ: Okay. That's a start.

10 Commissioner McGaffigan, second round.

11 COMMISSIONER McGAFFIGAN: Since the Chairman
12 didn't take me up on it, Dr. Hinze, I'll tell you --

13 CHAIRMAN DIAZ: No, I didn't because I ran out of time,
14 but I will.

15 COMMISSIONER McGAFFIGAN: Okay. I will tell you
16 one of the refreshing things about your study and discussion of rapid
17 solidification, I mean, I'm not a volcanist, but intuitively to me it sounds
18 more physical. With your predecessors some time removed, I remember
19 with Dr. Garrick once we were talking about some model that had
20 harmonic oscillators.

21 You know, the stuff was just sort of -- and it was so silly.
22 I mean, it was because it was calculable. So the standard that I'm using
23 is for yours to be the best thing I've read on the subject is not a high
24 standard, but also --

25 (Laughter.)

1 COMMISSIONER MERRIFIELD: Aren't you glad for that
2 clarification.

3 COMMISSIONER McGAFFIGAN: But, actually, I also think
4 that it's a very good piece of work.

5 Okay. A couple of other issues. Institutional controls, 100
6 years, at DOE sites, they're still going to be there 100 years from now.
7 They're still going to be there 500 years from now. I mean, I think it's
8 different.

9 I think that the Committee's interest in, say, at West
10 Valley, preferring -- you say that long-term control licenses are in
11 decommissioning, long-term control license over restrictive covenants.

12 I can understand that. I mean, DOE is supposed to under
13 the existing law leave, and NYSERDA becomes the licensee. And we
14 might well -- I mean, we hinted at it in our policy statement -- we might well
15 require a long-term license for the enduring licensee there given how we
16 see the possible cleanup of West Valley going.

17 So a long-term license may make sense. And long term
18 may be very long-term, well over 100 years, I mean, you know, with sort
19 of periodic reviews or whatever. Is this license terminatable at this time
20 because we're feeling that we can?

21 So I'll tell you, in DOE space, 100 years is probably an
22 optimistic estimate as to when they are going to be finished with their
23 cleanup activities, first round. And there are certainly ongoing national
24 requirements that will require them to continue to be there well beyond 100
25 years.

1 So 100 years to me is a short time for an institutional
2 control at the DOE site. Mr. Croff, do you --

3 MR. CROFF: Well, again, to reiterate the point, I am
4 talking about selecting a time at which a performance assessment will be
5 performed for the purposes of making a decision.

6 COMMISSIONER McGAFFIGAN: I'm saying even for a
7 performance assessment. I'm willing to go further. But we can have that
8 discussion another time.

9 Two other quick points. I agree with Commissioner Lyons
10 that we should look at the French Academy.

11 And then on the WIR reviews, I agree with Commissioner
12 Jaczko that it isn't just the one that we just did. There's also a paper that
13 the staff gave that I'm told is consistent with what we did, for example,
14 allowing the reactor vessel with internals intact to go to the Hanford
15 commercial waste site, about averaging. And it was something DOE
16 asked our staff to provide early on. I think it's actually out for public
17 comment. It's not a final thing.

18 But that's another example of something where I think you
19 all could reasonably roll up your sleeves and give us and the staff a quick
20 comment as to whether you believe that document on averaging is
21 appropriate.

22 CHAIRMAN DIAZ: Commissioner Merrifield?

23 COMMISSIONER MERRIFIELD: Thank you, Mr.
24 Chairman.

25 I was reminded of when you were having discussion with

1 Commissioner Jaczko about the Low-Level Waste Policy Act a comment
2 I made back in '98. And I still believe it. If I had to make my list of
3 unsuccessful Congressional initiatives, with over half a billion dollars spent
4 and not a single low-level waste site identified, the Low-Level Waste Policy
5 Act is probably one of the most horribly unsuccessful pieces of legislation
6 that ever passed Congress. But you don't need to comment on that.

7 In terms of an area I do want to probe, Dr. Clarke, in your
8 slides -- and this is somewhat along the lines of Commissioner
9 McGaffigan's probing -- on slide 29, you reference the fact that long-term
10 control license is preferred over restricted covenants.

11 Again, looking at it from my background in terms of trying
12 to deal with brown field areas, areas where you were trying to get back into
13 economic redevelopment, long-term licenses can put a cloud over a
14 specific facility vice a restricted covenant, which would allow greater
15 flexibility for the potential beneficial reuse of that land for the people who
16 live around and near that site.

17 I was struck. Those comments are more -- it doesn't strike
18 me as necessarily technical, which is traditionally your role, more of a land
19 use issue and potentially a legal analysis, particularly vis-a-vis restrictive
20 covenants. So I just wanted to know if you wanted to clarify that at all.

21 DR. CLARKE: I'm pleased. Thank you for the question.

22 The staff preference, as I understand it, for the long-term
23 license has a basis in several factors. And you are correct. I am not an
24 attorney. I'm very interested in this area, but I am not an attorney.

25 And their basis for the preference, as I understand it, is

1 that this is not an option that the Nuclear Regulatory Commission has
2 implemented. It's not been tested.

3 And, through work that I have done in other venues, I am
4 aware, I believe, of the possibility that enforcing a restrictive covenant can
5 depend very much on the jurisdiction in which the site is located.

6 So you're right. Those are not technical reasons for
7 having a preference, but --

8 COMMISSIONER MERRIFIELD: Well, I have been here
9 seven years. And I and others on this Commission have been trying to
10 push the staff to look at this with a greater eye toward making it work. And
11 clearly there are some members of our staff who would prefer to stick to
12 sort of the old tried and true, but the problem is for some sites out there,
13 I think we would be unnecessarily limiting the opportunity for beneficial
14 reuse by sticking to our guns on that.

15 That's a problem that EPA has found in a variety of brown
16 field sites across the country relative to hazardous waste and one that
17 certainly I think is worthy of you perhaps thinking about it a bit more.

18 Before my time is up --

19 COMMISSIONER McGAFFIGAN: Can I just clarify my
20 comment? I'm using your time.

21 It was a West Valley comment. At West Valley, I think we
22 probably may well need a long-term license. I entirely agree with
23 Commissioner Merrifield that restrictive covenants can be made to work
24 in many other circumstances.

25 COMMISSIONER MERRIFIELD: Yes.

1 CHAIRMAN DIAZ: I think we surprise ourselves.

2 COMMISSIONER MERRIFIELD: Well, it continues to
3 trouble me that our staff is sort of – are where they are, but we can
4 address that one, Mr. Chairman, later on.

5 CHAIRMAN DIAZ: Yes.

6 COMMISSIONER MERRIFIELD: The last thing I would
7 say, Dr. Weiner, on your comments about the Center for Nuclear Waste
8 Regulatory Analysis, you guys have spent a lot of time down there. We're
9 in a position right now where given where DOE is and where we are,
10 obviously there are some complications.

11 I would be interested separate and apart, perhaps in
12 written form, if you could give us some suggestions about any identifiable
13 areas that the Center might be able to broaden their assistance for the
14 agency, either as it relates to issues in front of NMSS or potentially given
15 all the reactors orders we have potentially ahead of us, whether there are
16 areas of expertise they might be able to assist us on in the NRR side of
17 the house because in my personal view, that is a resource that is
18 dedicated to this agency.

19 They have done good work. And certainly, given the
20 difficulties with Yucca Mountain, I don't think we should necessarily erode
21 that work. Perhaps we can think of other areas for them to work on.

22 So if you might be --

23 DR. WEINER: Thank you. I'll take --

24 COMMISSIONER MERRIFIELD: -- able to contribute to
25 that, I would appreciate it.

1 DR. WEINER: I will take that on. Thank you.

2 COMMISSIONER JACZKO: I wanted to go to a comment
3 that I think came out of the previous discussion and was in your letter on
4 decommissioning. I think it's a very good comment. And that has to do
5 with, again, in your letter on decommissioning, you said, "The committee
6 recognizes that the lessons learned from decommissioning projects
7 provide valuable information for designing new facilities."

8 That's something we heard a very similar point. We had
9 a very productive meeting on decommissioning several months ago. And
10 we heard a very similar comment from one of the decommissioning
11 managers, essentially making the point that the best way to deal with
12 decommissioning is to deal with problems up front. And I think it's a
13 similar comment there.

14 I'm wondering if you could provide a little more information
15 perhaps about how you see the Commission accomplishing that goal. Is
16 that something that should be a part of design criteria if you have any
17 thoughts on that at this point?

18 DR. CLARKE: Gee, I would like to think about that a little
19 more, but I think the intent of the observation was on a new facility, you
20 have an opportunity to factor into the design up front everything that you
21 have learned in the past, life cycle analysis, whatever you want to call it,
22 and that this is a real opportunity that I think should be seized as new
23 facilities are being considered.

24 I don't think a requirement that that be considered in the
25 initial design is unreasonable, just speaking for myself.

1 DR. RYAN: Jim, I might add, and Commissioner Jaczko,
2 that I think that there are also opportunities for existing facilities. You
3 know, every facility receives inspection, whether it's directly from the NRC
4 or through an Agreement State. And there is probably a gradation of
5 facilities in terms of performance. How is their housekeeping? Do they
6 generate a lot of waste? Have they had releases to the environment?
7 What's worked well? What hasn't worked well?

8 And I think it would be helpful to try and gather -- and I'm
9 not sure I even know how to best gather the information from the
10 inspection process, but there may be some lessons learned there on who
11 has been successful and not.

12 To me, from my own experience working for a licensee
13 and with other licensees, that higher performance of maintaining control
14 of materials during an operational phase certainly makes decommissioning
15 easy.

16 And you can see a range of performance in that area.
17 And I think picking it up, not only in the initial step of design and new
18 facilities, but also, who has an older facility that is doing well versus an
19 older facility that is not doing so well. And, that is another opportunity that
20 I clearly see could enhance the response to your question.

21 COMMISSIONER JACZKO: I can appreciate that. Now,
22 like I said, I think it was something that came out from the
23 decommissioning manager. I think it's a very good point.

24 And certainly I think, again, adding to the list of potential
25 work that I think the Chairman referred to, --

1 DR. RYAN: Sure.

2 COMMISSIONER JACZKO: -- this would potentially be
3 -- flushing that out a little bit I think would be very helpful and very fruitful
4 long term.

5 DR. RYAN: One specific series of case examples is the
6 decommission sites. To my knowledge, most sites that have been
7 decommissioned have taken more time, more money, and generated
8 more waste than initially expected. And that's because there was
9 something identified. I don't know. There was a small leak over 20 years.
10 And it created another 10,000 cubic feet of dirt that had to be managed
11 and taken care of and so forth.

12 So the question would be not only how do you factor that
13 into new design but is there a way for a similar facility to inspect or to
14 investigate in such a way that you could address that earlier in the
15 process, rather than at the end of the process?

16 So that's maybe a simple-minded example, but I think it's
17 a real one in my own mind. There are opportunities to get it right as we go
18 along, rather than just at the initial design or at the very end.

19 COMMISSIONER MERRIFIELD: Mr. Chairman, on that
20 last note, I think there are -- we talked a lot about decommissioning.
21 That's been an area which obviously, you know, I have a lot of interest in.

22 It might be worthy of taking a look at some of the things
23 that they have been doing out at the Dairyland Power La Crosse site. That
24 one has been somewhat under the radar screen, but they have been
25 conducting a lot of ongoing decommissioning activities at a relatively

1 modest cost.

2 Another one with some ongoing activity at the G.E. Morris
3 site. Although that is still an operating facility, the crew who operate that
4 site have been able to do some work along the lines that has taken a lot
5 of that material out at a relatively modest cost.

6 There may be some other areas in the scope you might
7 want to take a look at.

8 DR. RYAN: Absolutely.

9 COMMISSIONER MERRIFIELD: Thank you.

10 COMMISSIONER McGAFFIGAN: Mr. Chairman, since
11 Commissioner Merrifield managed to -- he's learned the art of not using
12 somebody else's time -- let me just say that, again, following up on
13 Commissioner Jaczko, if reprocessing is going to be considered in this
14 nation, the only example we have at the moment of a reprocessing facility
15 is West Valley. And it's an ugly one.

16 Figuring out from the start how to build design features
17 into reprocessing plants so that they can be decommissioned for less than
18 gazillions of dollars at the end would probably be a worthwhile place for
19 you all to work if reprocessing is going to happen.

20 CHAIRMAN DIAZ: Interesting. I agree.

21 Commissioner Lyons?

22 COMMISSIONER LYONS: Just a couple of more
23 comments. Dr. Weiner, you referred to the Package Performance Study,
24 which you could put me down as a very strong advocate for doing that
25 study, but that is another area where I worry that as DOE's plans are

1 modified and changing, we may need to perhaps defer that study a while
2 or at least be very careful before we jump into a study and then find that
3 DOE is undoing the parameters on which it is based. So that is more a
4 comment, but maybe you want to respond.

5 DR. WEINER: Just briefly, one of the things that we are
6 now engaged in is looking back at the history of NRC involvement in
7 transportation. In particular, of course, it's been with transportation
8 packaging. And we did have a presentation on the fabrication of the waste
9 package, which has led to some consideration of this.

10 If the Department of Energy goes entirely as I expect they
11 will to transporting canistered fuel, fuel that has already been canistered,
12 it seems to me there are two apparent differences, two apparent
13 considerations. One is that probably the robustness and testing and
14 modeling of the behavior casks in very severe accidents is not going to
15 yield anything that is worse than we have now. In other words, if there is
16 another layer, all it can do is increase the safety.

17 On the other hand, if you have canistered fuel -- and we
18 do transport some canistered fuel now -- the fuel at Idaho National
19 Engineering Laboratory is already canistered. And that will be transported
20 in type B spent fuel casks.

21 I believe that would probably carry fewer assemblies per
22 cask, which would result in more trips. That is the most obvious result of
23 this change, those two items. But I think that it does bear some looking at.

24 Since we have not yet received the protocols for the
25 Package Performance Study and I recognize that the suggestion has also

1 been made that we include, which wasn't originally the case, that we
2 include fire in those, fire resistance in those protocols, I think there is an
3 opportunity to look at them and to perhaps structure them to better
4 address what you are bringing up.

5 COMMISSIONER LYONS: Thank you.

6 The other question I was going to ask was to Dr. Croff,
7 where you had many questions on waste incidental to reprocessing
8 already. But in part of your discussion, you mentioned visits to Savannah
9 River and discussions with different stakeholders in the Savannah River
10 area.

11 I was just curious if you could perhaps characterize those
12 discussions on the degree of support for the direction that is chosen or if
13 you –

14 MR. CROFF: No. Maybe I misled. We did indeed visit
15 Savannah River and talk with the DOE staff and tour and do the normal
16 things. We were accompanied by one stakeholder and not a local
17 stakeholder, but there were no public meetings or input obtained in that
18 way.

19 COMMISSIONER LYONS: Thank you.

20 DR. RYAN: A member from Clark County, Nevada.

21 CHAIRMAN DIAZ: All right. On Commissioner
22 McGaffigan's advice, I'm going to now turn to igneous activity. I do agree
23 that the views presented provide us with a fresh view and a different view
24 and one that I can really relate to in, again, physical terms.

25 The problem that we have had with igneous activity over

1 the years that we have been here is the different groups with so many
2 different opinions and the opposing, contradicting, sometimes slightly
3 supporting.

4 And, you know, I believe you have done a good piece of
5 work, but let me bring it down to a level of something that the Commission
6 would probably eventually like to do is, how do we reduce the body of
7 knowledge to a set in which the Commission can eventually make a policy
8 decision regarding what needs to be done in this area, if anything more,
9 or how do we accept or how do we go forward?

10 In other words, you have an opinion. There are other
11 opinions in there. How do we bring them to a set that this Commission
12 can sit and decide what is it that should be done?

13 DR. HINZE: Well, Chairman, I remember writing a letter
14 to the Commission, I think back in '91, suggesting that we start to think
15 about closing down the igneous activity issue.

16 CHAIRMAN DIAZ: We have said this several times.

17 DR. HINZE: And I was author of those letters, some of
18 those letters. So I must be beaten up on that. But let me just say that the
19 knowledge regarding the prediction of volcanoes and its consequences in
20 an underground facility were extremely primitive 15 years ago.

21 I mean, our knowledge was extremely limited. And
22 through the efforts of the NRC, its contractors, the DOE, we have had a
23 tremendous growth curve in the last decades. I see that as now starting
24 to plateau out.

25 And I think that in this letter, we have hit these three items.

1 And I think the alternative scenario is one that obviously we think that the
2 NRC staff should investigate.

3 We're not telling them what is going to happen to it. We
4 haven't done the calculations. And, frankly, it's going to take a good deal
5 of effort to do that. It's not trivial. But I think it can be done and done in
6 a manner that will be acceptable to the community.

7 I think also that the probabilistic volcanic hazard analysis
8 update that is currently being undertaken by the DOE and which is being
9 monitored by your staff as well as us is looking at the very newest of data
10 and, in fact, is collecting data; in fact, it's on hold right now because of
11 some dating problem, some work to do dating.

12 So that, too, is really coming to fruition. I think we're
13 seeing this plateau out, sir. And I think we're going to -- we'll never know
14 everything, obviously, but we'll be there where we can minimize the
15 uncertainties to the point where we can really deal with them in a
16 risk-informed basis.

17 CHAIRMAN DIAZ: Sir, I totally agree that we will not know
18 everything. I think what this Commission needs to have is a series of
19 well-thought-out analyses that will allow the decision sometime. I don't
20 know. Next year. I'm not going to prejudge. But there has to be a plan
21 because we keep doing this, in which in front of the Commission, these
22 issues need to be brought for deliberation and discussion and
23 decision-making because if not, it keeps going ad infinitum.

24 One comment. I think we have a comment of minutes.
25 And then I will go back to my fellow Commissioners. The issue of -- it's

1 just amazing of how life goes on institutional controls, how long you need
2 to control something.

3 Last night somebody asked me a question that I did not
4 answer. I did not answer because whatever I answered could be
5 misconstrued as a meeting and opinion, but the question was, if you have
6 a geologic repository that is a nice geologic repository and you will put, you
7 know, packages in there with, say, a lifetime expected of 300 years and
8 you only expected them to be there for 100 years but the lifetime that is
9 300 years, would there be enough evidence now to be able to have a
10 sound technical opinion, just sound technical opinion, on whether you
11 could actually put in such a repository packages in a manner that they can
12 be either recovered or kept for a period of 100 years?

13 And the word that was used was "used" fuel. I haven't
14 seen that word in a long time, rather than spent fuel. It was used fuel,
15 which I didn't relate to very well.

16 Did I express the question correctly? Will there be enough
17 evidence technically to say you take a repository and put packages, like
18 the packages that we have seen, and somebody were to conclude, like I
19 heard many times that there are at least 300 years before these packages
20 will have any problems, and we determined that they were only going to
21 be there 100 years, at the end of 100 years, there is going to be, you
22 know, an institutional control exacted on it.

23 Would you concede that that could be done with
24 reasonable assurance of public health and safety?

25 COMMISSIONER McGAFFIGAN: Can I clarify the

1 question, please?

2 CHAIRMAN DIAZ: Yes.

3 COMMISSIONER McGAFFIGAN: Are you implying that
4 the fuel at that point may have useful value and, therefore, it was being
5 taken out of the repository?

6 CHAIRMAN DIAZ: It could or it could be taken out at that
7 time and put in another repository. It could be retransported. It could be
8 moved. It could have a value. It could be done. I'm not assuming.

9 It's just that can you have something sitting on a geologic
10 repository with a package supposedly is envisioned to last 300 years and
11 you're going to have it 100 years. Do you think there is enough technical
12 information that would be available to make a technical decision on it?

13 DR. RYAN: The easy answer is you chose not to answer
14 that question.

15 (Laughter.)

16 DR. RYAN: It certainly embodies many of the challenges
17 we have talked today, the last couple of hours about, Mr. Chairman.

18 CHAIRMAN DIAZ: It was an easy question.

19 DR. RYAN: It was an easy question.

20 CHAIRMAN DIAZ: All right. I just thought I would throw
21 out that one for good thought. But do any of my fellow Commissioners
22 have an additional comment or question?

23 (No response.)

24 CHAIRMAN DIAZ: If not, I want to thank the Committee.
25 It has been fun. That's one of the best compliments that we all can think

1 of. We actually enjoyed the discussion. We think you brought many
2 issues to the table that we believe are important. We obviously have
3 enriched your plate with a series of what the NRC calls challenges.

4 DR. RYAN: Indeed.

5 CHAIRMAN DIAZ: And, therefore, we look forward to your
6 work to continue communicating with us. Thank you very much. We are
7 adjourned.

8 (Whereupon, the foregoing matter was concluded at 11:54
9 a.m.)

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