

ACNW-0040

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33RD ACNW MEETING
JULY 25-26, 1991

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Regional Programs Subcommittee meeting, and other related activities of the Committee members.

I. Use of Probabilistic Risk Assessment (Open)—Discussion of a proposed committee report to the NRC regarding use of probabilistic risk assessment in the regulatory process.

J. Future ACRS Activities (Open)—Discussion of anticipated Subcommittee activities and items proposed for full consideration by the full Committee.

K. Improved Guidance for Performing Regulatory Analyses (Open)—Briefing by and discussion with representatives of the NRC staff regarding SECY-91-114, Proposed Actions to Improve Guidance for Performing Regulatory Analyses.

L. Operator Requalification (Open)—Briefing by and discussion with representatives of the NRC staff regarding the program for requalification of operators including the impact of using symptom-based emergency procedures on the requalification of nuclear power plant operators.

M. Preparation of ACRS Reports (Open)—Discussion of proposed Committee reports to NRC on proposed resolution of Generic Safety Issue 130, Essential Service Water System Failures at Multi-Unit Sites, risks associated with low-power and shutdown operations at nuclear power plants, and the proposed schedule for NRC/ACRS review of Evolutionary and advanced nuclear power plant designs including the proposed EPRI Requirements for Advanced LWRs.

N. Miscellaneous (Open)—Complete discussion of items that were not completed during previous ACRS meetings as time and availability of information permit.

376th ACRS Meeting, August 6-10, 1991—Agenda to be announced.

377th ACRS Meeting, September 5-7, 1991—Agenda to be announced.

ACNW Full Committee and Working Group Meetings

33rd ACNW Meeting, July 25-26, 1991, Bethesda, MD. Items are tentatively scheduled.

A. Meet with the NRC Commissioners to discuss items of mutual interest.

B. Discuss a recent trip to and meeting at the Center for Nuclear Waste Regulatory Analyses.

C. Discuss the use of expert judgment in conducting performance assessments in support of licensing of high-level and low-level waste repositories. Prepare a report for the Commission on the proper role of expert judgment in performance assessment.

D. Hear a briefing by the NRC/RES staff on proposed revisions to the NRC

regulations on transportation of radioactive materials that are being revised to be consistent with the IAEA recommended guidance.

E. Discuss anticipated and proposed Committee activities, future meeting agenda, administrative, and organizational matters, as appropriate. Also, discuss matters and specific issues that were not completed during previous meetings as time and availability of information permit.

34th ACNW Meeting, August 28-29, 1991—Agenda to be announced.

35th ACNW Meeting, September 25-27, 1991—Agenda to be announced.

36th ACNW Meeting, October 23-24, 1991—Agenda to be announced.

37th ACNW Meeting, November 20-21, 1991—Agenda to be announced.

38th ACNW Meeting, December 18-19, 1991—Agenda to be announced.

ACNW Working Group on

Preparation of Regulatory Guides for Implementing Revisions to 10 CFR part 20, August 20-22, 1991, Bethesda, MD. The Working Group will review nine regulatory guides related to the implementation of the revised 10 CFR Part 20, which assess the impacts of handling, storage and treatment of nuclear waste materials, as well as other activities related to nuclear energy.

ACNW Working Group on NRC staff Computer Modeling and Performance Assessment Capabilities in High-Level and Low-Level Waste, September 11-13, 1991. The Working Group will review the NRC staff's capabilities to make independent evaluations of licensee proposals with respect to the performance of low-level and high-level radioactive waste disposal facilities. Emphasis will be placed on computer capabilities involving modeling, documentation, verification and validation.

ACNW Working Group on Geologic Dating, October 22, 1991, Bethesda, MD. The Working Group will review the problems and limitations with various Quaternary dating methods to be used in the assessment of volcanic features and materials for the site characterization of a high-level waste repository.

ACNW Working Group on Residual Contamination Clean-up Criteria, October 25, 1991, Bethesda, MD. The Working Group will review the clean-up criteria for unrestricted use of contaminated sites that have been, or were at one time, under AEC or NRC license. The NRC staff is in the process of determining acceptable levels for uranium- and thorium- contaminated

soils and structures to be released for unrestricted use.

ACNW Working Group on the Impact of Long-Range Climate Change in the Area of the Southern Basin and Range, November 19, 1991, Bethesda, MD. The Working Group will review the potential long-range climate changes and their impact on performance assessments of a proposed high-level repository.

ACNW Working Group on Post-Closure Monitoring, November 22, 1991, Bethesda, MD. The Working Group will review the potential problems and possible limitations associated with the post-closure monitoring of a proposed high-level waste repository. The potential utilization of non-invasive methods for the attainment of such a capability as well as the duration of such monitoring, and the significance and impact of results will also be considered.

ACNW Working Group on Inadvertent Human Intrusion Related to the Presence of Natural Resources at a High-Level Waste Site, December 17, 1991, Bethesda, MD. The Working Group will review the methodologies for assessment of the potential for natural resources at a proposed high-level waste site.

Dated: June 14, 1991.

John C. Hoyle,

Advisory Committee Management Officer.

FR Doc. 91-14649 Filed 6-19-91; 8:45 am]

BILLING CODE 7590-01-M

Solicitation of Public Comments on Generic Issue 23, "Reactor Coolant Pump Seal Failure", Extension of Public Comment Period

The U.S. Nuclear Regulatory Commission (NRC) is announcing an extension of the public comment period regarding Generic Issue 23, "Reactor Coolant Pump Seal Failure." The public comment period was to expire on July 31, 1991. (See Federal Register Notice dated April 19, 1991, Page 16130). The NRC has decided to extend the public comment period to September 30, 1991, due to requests for additional time to prepare responses.

Dated at Rockville, MD this 11 day of June, 1991.

For the Nuclear Regulatory Commission,
Warren Minners,

Director, Division of Safety Issue Resolution,
Office of Nuclear Regulatory Research.

[FR Doc. 91-14732 Filed 6-19-91; 8:45 am]

BILLING CODE 7590-01-M



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555

DISC/E:33RD.MTG

SCHEDULE AND OUTLINE FOR DISCUSSION
33RD ACNW MEETING
JULY 25-26, 1991

Thursday, July 25, 1991, Room P-110, 7920 Norfolk Avenue, Bethesda,
Maryland

- 1) 8:30 - 8:45 a.m. Opening Remarks by ACNW Chairman (Open)
1.1) Opening Remarks (DWM/RKM)
1.2) Items of Current Interest (DWM/RKM)
- 2) 8:45 - 12:00 ¹⁰ p.m. ~~NOON~~ Preparation for Meeting with NRC Commissioners
9:50 - 10:15 (Open)
(~~10:30-10:45~~ a.m.)
BREAK

Potential Discussion Items:

- 2.1) 10 CFR Part 61: Groundwater Protection and Retardation and Retention of Radionuclides-Considerations
2.2) EPA HLW Standards: Dealing with Uncertainties; Response to Six Questions Accompanying Working Draft 3
2.3) Impressions from June 26-28, 1991 Center for Nuclear Waste Regulatory Analyses (CNWRA) Trip
2.4) Integration of Geophysics into Site Characterization (Working Group Report)
2.5) Considerations in the Use of Expert Judgment in the Conduct of Repository Performance Assessments (Working Group Report)

¹⁰
~~12:00~~ - 1:00 p.m.

LUNCH

1:00 P.M.

Depart for One White Flint North, Rockville Maryland, Commissioners Conference Room, First Floor

- 3) ¹⁵
~~2:04~~ - 3:00 p.m.

Meeting with NRC Commissioners (Open)
3.1) Discuss Topics noted in 2) above

3:30 p.m.

Depart for Phillips Bldg., 7920 Norfolk Avenue, Bethesda, Maryland

- 4) ⁴⁰
3:50 - 4:00 - 5:30 p.m.

Preparation of ACNW Reports (Open) (DWM/RKM)
4.1) Recommendations to the NRC on the role of expert judgment in performance assessment
4.2) Observations during June 26-28, 1991 ACNW visit to the CNWRA

5:30 p.m.

RECESS

Friday, July 26, 1991, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland

- 5) 8:30 - 10:15 a.m. Preparation of ACNW Reports (Open) (DWM/RKM)
5.1) Continue discussion of proposed ACNW reports noted above in item 4

9:40 10
~~10:15~~ - 10:30 a.m.

BREAK

- 6) 10:30¹⁰ - 11:30 a.m. Anticipated ACNW Activities (Open) (DWM/RKM)
6.1) The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters as appropriate.
6.1.1) Set August Agenda
6.1.2) Anticipated activities through November
6.1.3) Working Group Schedule for August, September
- 10CFR Part 20 Implementing Regulatory Guides
- Staff Computer Modeling & Performance Assessment Capabilities in High-Level and Low-Level Waste

6.1.4) ACNW Staff Projects

- 7) 11:30 - 12:00 NOON Preparation of ACNW Reports (Open)
7.1) Complete preparation of reports noted above in Item 4

12:07 p.m.
~~12:00 NOON~~

ADJOURN

CERTIFIED

Issued: August 29, 1991

MINUTES OF THE 33RD MEETING OF THE
ADVISORY COMMITTEE ON NUCLEAR WASTE
JULY 25-26, 1991
BETHESDA, MARYLAND

The 33rd meeting of the Advisory Committee on Nuclear Waste was held Thursday and Friday, July 25-26, 1991, at 7920 Norfolk Avenue, Bethesda, Maryland.

Dr. Dade W. Moeller, Committee Chairman, convened the meeting at 8:30 a.m. and briefly reviewed the schedule for the meeting. He stated that the meeting was being conducted in conformance with the Federal Advisory Committee Act. He announced that no transcript of the meeting will be made.

[Note: ACNW members, Drs. William J. Hinze, Dade W. Moeller, Martin J. Steindler and Paul W. Pomeroy were present. For a list of attendees, see Appendix I.]

I. CHAIRMAN'S REPORT (Open)

[Note: Mr. Richard K. Major was the Designated Federal Official for this part of the meeting.]

Dr. Moeller identified a number of items that he believed to be of interest to the Committee, including:

- On July 2, 1991, Dr. Ivan Selin was sworn in by the Vice President as the new Chairman of the Nuclear Regulatory Commission.
- Dr. Unte Cheh joined the ACNW/ACRS staff for a six month rotational assignment.
- The Yucca Mountain Site Characterization Project Office, U.S. Department of Energy (DOE), announced that site characterization work began on July 9, 1991.
- U.S. Environmental Protection Agency (EPA) plans to issue the high-level radioactive waste (HLW) standards (10 CFR Part 191) with changes only necessary to respond to the remands of the court. Issuance is expected prior to the end of this calendar year. EPA determined that the use of "negotiated rulemaking" on the proposed HLW standards was not a worthy effort.

33rd ACNW Meeting
July 25-26, 1991

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- Dr. Moeller met with Chairman Selin on Wednesday, July 24, 1991. A summary of the meeting will be forthcoming.

II. MEETING WITH THE NRC COMMISSIONERS (Open)

[Mr. Raymond F. Fraley was the Designated Federal Official for this part of the meeting.]

In preparation for the meeting, the Committee reviewed the areas of interest to be discussed with the Commissioners. The Committee traveled to the One White Flint North Building, Rockville, Maryland, on Thursday afternoon, July 25, 1991.

The Committee discussed the following items of mutual interest with the Commissioners:

- Uncertainties in implementing the EPA HLW standards and the response to six questions accompanying working draft #3 of the EPA standards
- Visit to the Center for Nuclear Waste Regulatory Analyses
- Use of expert judgment in performance assessment for a geologic repository

The meeting with the Commissioners began at 2:00 p.m. and was adjourned by Chairman Selin at 3:15 p.m.; upon which, the Committee returned to the Phillips Building.

[According to Staff Requirements Memorandum to Mr. William C. Parler, General Counsel, from Mr. Samuel J. Chilk, Secretary, dated June 9, 1989, the Office of the Secretary provides a transcript to the ACNW as the record for this part of the meeting. The transcript is attached as Appendix IV.]

III. EXECUTIVE SESSION (Open)

[NOTE: Mr. Richard K. Major was the Designated Federal Official for this part of the meeting.]

A. Memoranda

- The Role of Formal Elicitation of Expert Judgment in the Performance of a Geologic High-Level Waste Repository (Memorandum to Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards, dated July 31, 1991.)

- Visit to the Center for Nuclear Waste Regulatory Analyses (Memorandum to Eric S. Beckjord, Director, Office of Nuclear Regulatory Research, and Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards, dated July 31, 1991.)

B. Expert Judgment

The Committee discussed and issued a memorandum on the use of expert judgment in conducting performance assessments in support of the licensing of a geologic high-level radioactive waste repository.

During the discussion, the Committee reviewed a memorandum to Mr. Giorgio Gnugnoli from Dr. Robert Budnitz, President, Future Resources Associates, Inc., dated July 14, 1991, regarding expert judgment in the regulatory decision process for a high-level waste repository. The Committee recommended that this memorandum be provided to the NRC staff for resource planning, if the author agrees. The Committee also recommended that Mr. Giorgio Gnugnoli determine whether the results of his telephone survey on "How much expert judgment is too much?" can be released to the NRC staff. (Note: Dr. Budnitz's report has been sent to the NRC staff. The public release of the telephone survey is still being determined.)

C. Visit to the Center for Nuclear Waste Regulatory Analyses

The Committee discussed its recent trip to and meeting at the Center for Nuclear Waste Regulatory Analyses. A memorandum commenting on the activities of the Center was issued.

During the discussion of the Systematic Regulatory Analysis (SRA) that was conducted by the Center, the members expressed concern on whether some issues identified in the SRA are being adequately addressed by the NRC staff. Mr. John Linehan, NMSS, noted that a report on this subject was issued last March and was provided to the Committee. He also stated that the NMSS staff is preparing a "white paper" on the SRA and proactive program and offered to make it available to the Committee when completed. Dr. Pomeroy expressed his interest in seeing the paper and more specifically, wanted to know how iterative performance assessment will be used.

D. ACNW Future Activities

- The Committee agreed to expand the 33rd meeting to include a two-hour executive session on Tuesday and Wednesday evenings from 7:00 to 9:00 p.m. These sessions were scheduled to provide more time for the members to

discuss a response to Chairman Selin's questions and the NRC staff's response to recent ACNW reports. [Note: Based on later discussions with meeting participants, only one evening session (Tuesday) was determined to be necessary.]

- Dr. Moeller announced that the Electric Power Research Institute has scheduled a Workshop on the Environmental Protection Agency HLW Criteria to be held on September 24-26, 1991. Dr. Moeller was invited to present a paper addressing the merits of dose-based standards. The members suggested that either Drs. Jack Parry or Melvin Carter, Nuclear Waste Technical Review Board, would be more likely candidates to address dose-based standards since they have recently published a paper on this subject. The members suggested that Mr. Fraley communicate this recommendation to Mr. Robert Williams. The members expressed interest in attending the Workshop and recommended that Dr. David Okrent be asked to attend on behalf of the Committee.

Due to a conflict in meeting dates, the Committee agreed to reschedule the 34th ACNW meeting from September 25-27th to September 27, 1991.

- The Committee tentatively agreed to schedule the Working Group meeting on the Review of Regulatory Guides for Implementing Revisions to 10 CFR Part 20 on September 23-24, 1991.
- The members discussed a recent incident involving a potential criticality problem at the General Electric Fuel Fabrication Facility at Wilmington, North Carolina. The Committee agreed not to schedule a briefing, however, the members expressed interest in receiving any additional information that may be forthcoming from the upcoming ACRS briefing on this subject.
- The Committee agreed to schedule a visit to the Waste Isolation Pilot Project, Carlsbad, New Mexico, on or about November 5, 1991.
- The Committee requested that the ACNW staff prepare a summary paper on future low-level waste issues, such as BRC, NESHAPs, and the proliferation of LLW compact facilities.
- The Committee was notified that Messrs. Larson and Gnugnoli will attend a two day workshop, sponsored by RES, on LLW performance assessment methodology.

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- Dr. Moeller noted that he heard that the U.S. Department of Energy (DOE) had abandoned the idea of vertical shafts into Yucca Mountain. He requested that the staff learn more about DOE's plans.
- Dr. Moeller requested a copy of the revised siting plan for the Appalachian Compact, prepared by Chem-Nuclear.

E. Future Meeting Agenda

Appendix II summarizes the proposed items for future meetings of the Committee and related Working Groups. This list includes items proposed by the Commissioners and NRC staff as well as ACNW members.

The meeting was adjourned on Friday, July 26, 1991, at 12:07 p.m.

APPENDIX I: MEETING ATTENDEES

**33RD ACNW MEETING
JULY 25-26, 1991**

<u>ACNW MEMBERS</u>	<u>1st Day</u>	<u>2nd Day</u>	<u>_____</u>
Dr. William J. Hinze	<u> X </u>	<u> </u>	<u> </u>
Dr. Dade W. Moeller	<u> X </u>	<u> X </u>	<u> </u>
Dr. Paul W. Pomeroy	<u> X </u>	<u> X </u>	<u> </u>
Dr. Martin J. Steindler	<u> X </u>	<u> X </u>	<u> </u>

<u>NRC STAFF</u>		<u>1st Day</u>	<u>2nd Day</u>	<u>_____</u>
Abraham Eiss	NMSS	X	X	
John Linehan	NMSS	X		
Helen Pastis	NRR	X	X	
Clark Prichard	RES	X		

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

Bob Adler	CNWRA
John A. Blair	Fluor Daniel
Stephen A. Carroth	TRW
Drew Corson	ICF
H. Jean Damerson	TRW
Linda Embrey	TRW
William Haslebacher	Weston
John E. Latz	CNWRA
Barbara Long	CNWRA
Homi Minwalla	Weston/Jacobs Engineering
W.C. Patrick	CNWRA
Edward Regnier	DOE
Leon Reiter	NWTRB
Roles	DOE
William E. Russo	EPA

APPENDIX II. FUTURE AGENDA

34th ACNW Committee Meeting August 27-29, 1991 (Tentative Agenda)

Review of DOE's Site Characterization Plan by the State of Nevada
Representatives of the State of Nevada will brief the Committee on the State's review and comments on DOE's Site Characterization Plan and related Study Plans.

Responses to DOE's Site Characterization Plan - The Committee will be briefed by representatives of DOE on its responses to comments received from EPA, NRC, and the State of Nevada on the Yucca Mountain Site Characterization Plan.

Responses to NRC's Site Characterization Analysis - The Committee will be briefed by representatives of the Division of High Level Waste Management (HLWM) on the results of the review of DOE's responses to the NRC staff's Site Characterization Analysis.

Proactive Program for High-Level Waste Management - The Committee will be briefed by the HLWM staff on its proactive program on HLW. This involves planned rulemakings, guidelines, and technical positions in support of the HLW program.

ACNW Four-Month Plan - The Committee will prepare its next four-month plan to the Commission for the period September-December 1991.

Response to a Request from Chairman Selin - The Committee will begin deliberations on what technical and scientific questions are necessary to make a determination that adequate technology is available to safely store HLW (spent fuel) resulting from nuclear power plant operations on an interim basis for the next 50 years.

EPA High-Level Waste Standards - The Committee will review the current position of the NRC staff on the Working Draft #3 of the EPA HLW Disposal Standards. The Committee will also review a revised NRC staff paper on their approach for dealing with uncertainties in implementing the EPA HLW Disposal Standards.

Containment Requirements in 40 CFR Part 191 - The Committee will review the NRC staff's response to the ACNW report, dated May 30, 1991, on alternative approach to the probabilistic section of the containment requirements in 40 CFR Part 191 ("The Three-Bucket Approach").

Rule on Ethical Conduct of Employees - The Committee will discuss the proposed OGE rule on ethical conduct of employees of the Executive Branch and the impact it will have on the personal and professional (non-government) activities of Committee members as well as its impact on the functioning of the Committee. [Portions of this session will be closed as necessary to discuss information

the release of which would represent a clearly unwarranted invasion of personal privacy.]

Committee Activities - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate. The members will also discuss matters and specific issues that were not completed during previous meetings as time and availability of information permit.

APPENDIX III. DOCUMENTS RECEIVED

A. Documents Received from Presenters and ACNW Staff

AGENDA

DOCUMENTS

ITEM NO.

1 Chairman's Report

1. Items of Possible Interest to ACNW Members and Staff, dated July 20, 1991, by Dade W. Moeller [Official Use Only]

2 Preparation for Meeting with the NRC Commissioners

2. Questions of Interest to Chairman Selin, dated July 25, 1991
3. 40 CFR Part 190.01, Subchapter F - Radiation Protection Programs (pages 6-7)
4. Memorandum to Howard Larson from Martin Steindler, undated, re Notes for Meeting with Commissioners, with Enclosure [Official Use Only]

4 Preparation of ACNW Reports

5. Proceedings of Alpha-Contaminated Waste Management Workshop held on August 10-13, 1982 (CONF-820845)
6. Ethical Aspects of Nuclear Waste, by Lars Persson, Health Physics, Vol. 58, No. 3, March 1990, pp. 351-353
7. On the Chemical Hazard of Nuclear Waste, by Lars Persson, Presented at International Symposium on Environmental Consequences of Hazardous Waste Disposal in Stockholm, May 27-31, 1991
8. Report Brief on Conceptual Model for Radiological Performance Assessment of Low-Level Radioactive Waste Disposal Facilities, by M.M. Stevens, ORNL/TM-11495
9. Report Summary on Use of Batch and Column Methodologies to Assess Utility Waste Leaching and Subsurface Chemical Attenuation, Electric Power Research Institute, EPRI EN-7313s, May 31, 1991
10. Letter to Giorgio Gnugnoli from Robert Budnitz, Future Resources Associates, Inc., dated July 14, 1991, re Some Ruminations on Using Expert Judgment in the Regulatory Decision Process for a High Level Nuclear Waste Repository [Official Use Only]

B. Meeting Notebook Contents Listed by Tab Number

TAB

CONTENTS

1 Chairman's Report

1. Introductory Statements by ACNW Chairman for the 33rd Meeting, dated July 25-26, 1991
2. Items of Current Interest, undated
3. Announcement to All NRC Employees, dated July 9, 1991, re Message from the Chairman
4. Resume of Dr. Unte Cheh, undated
5. Announcement to All NRC Employees, dated June 18, 1991, re Rotational Assignments Within NMSS

2 Meeting with the Commission

6. Memorandum to ACNW Members from Howard Larson, dated July 12, 1991, re Potential Topics for July 25, 1991 ACNW Meeting with NRC Commissioners, with Enclosure
7. Memorandum to Samuel Chilk from Raymond Fraley, dated July 17, 1991, re ACNW Meeting with NRC Commissioners - July 25, 1991, with Enclosure
8. Memorandum to ACNW Members from Stanley Schofer, dated July 17, 1991, re ACRS Meeting with Chairman Selin, with Enclosure

6 Anticipated ACNW Activities

9. List of Tentative Items for Future Meetings, undated
10. Memorandum to Raymond Fraley from James Blaha, dated July 3, 1991, re Proposed Agenda Items for the ACRS and the ACNW, with Enclosure
11. Enclosure 4 to Fellowship Program Monthly Report, dated July 18, 1991, Staff Engineers' and Staff Scientists' Research Projects

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Title: PERIODIC MEETING WITH ADVISORY COMMITTEE
ON NUCLEAR WASTE (ACNW)

Location: ROCKVILLE, MARYLAND

Date: JULY 25, 1991

Pages: 53 PAGES

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DISCLAIMER

This is an unofficial transcript of a meeting of the United States Nuclear Regulatory Commission held on July 25, 1991, in the Commission's office at One White Flint North, Rockville, Maryland. The meeting was open to public attendance and observation. This transcript has not been reviewed, corrected or edited, and it may contain inaccuracies.

The transcript is intended solely for general informational purposes. As provided by 10 CFR 9.103, it is not part of the formal or informal record of decision of the matters discussed. Expressions of opinion in this transcript do not necessarily reflect final determination or beliefs. No pleading or other paper may be filed with the Commission in any proceeding as the result of, or addressed to, any statement or argument contained herein, except as the Commission may authorize.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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PERIODIC MEETING WITH ADVISORY COMMITTEE
ON NUCLEAR WASTE (ACNW)

- - - - -

PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Thursday, July 25, 1991

The Commission met in open session,
pursuant to notice, at 2:00 p.m., Ivan Selin,
Chairman, presiding.

COMMISSIONERS PRESENT:

- IVAN SELIN, Chairman of the Commission
- KENNETH C. ROGERS, Commissioner
- JAMES R. CURTISS, Commissioner
- FORREST J. REMICK, Commissioner

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STAFF SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

STUART TREBY, Office of the General Counsel

DR. DADE W. MOELLER, ACNW

DR. WILLIAM J. HINZE, ACNW

DR. MARTIN J. STEINDLER, ACNW

DR. PAUL W. POMEROY, ACNW

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

2:00 p.m.

CHAIRMAN SELIN: Good afternoon, folks.

This is my first meeting with the Advisory Committee on Nuclear Waste, which I've been looking forward to ever since I met with the Advisory Committee on Reactor Safeguards.

Doctor Moeller, rather than go through sort of the general opening remarks, we did have a chance to meet informally yesterday. I'm very pleased on behalf of the Commission to welcome the members of our Advisory Commission here to discuss items of mutual interest.

Of course, our agenda today is whatever you may like to bring up, but one of the topics that I discussed yesterday in our first meeting with your Chairman was the -- well, let me go back a step. When I read your charter, I was very pleased to see how specific it was. Everything in the charter is something that would be useful for the Commission and nothing that's obviously useful for the Commission in these high priority areas is out of the charter. It's well focused and it's well thought out.

As you get to know us better, although we try to appear as a monolithic Commission, each of the

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Commissioners has his own particular areas of interest and those of mine that overlap with your Committee have to do with high-level waste, particular as it affects the acceptability of expanded use of nuclear power in the country.

What I asked Doctor Moeller to do was to take a look at whether it is possible to make a statement more or less to the effect that there's been technical progress in high-level waste, a number of short and medium-term steps are pretty much in hand if steps A, B, C, and D could be done, whereas the longer term steps obviously, because the standards are so difficult and the time period is so far much more difficult that in fact except for whatever exceptions you need that we would be able to say with some technological and scientific background that the handling of high-level waste for the mid-term, which is on the order of 50 years, is not in itself a particular technical concern towards the continuation and perhaps even the expansion of nuclear power. There are a lot of aspects to that and I wouldn't presume to try to lay out what are the subquestions, but that seems to be a nice big question which could be subdivided into half a dozen well formed questions which are subject to some technical review.

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1 So, from my own personal interest as
2 opposed to the Commission as a whole, we are
3 interested in whatever you have to say to us, in my
4 own case.

5 Commissioner Rogers?

6 COMMISSIONER ROGERS: I don't have
7 anything at the moment.

8 CHAIRMAN SELIN: Commissioner Curtiss?

9 Commissioner Remick?

10 COMMISSIONER REMICK: Nothing.

11 CHAIRMAN SELIN: Fine.

12 I'll turn the floor over to you.

13 DOCTOR MOELLER: Well, thank you, sir.
14 We discussed that briefing this morning and Doctor
15 Steindler has some comments to offer on it.

16 DOCTOR STEINDLER: The storage of high-
17 level waste, specifically spent fuel, is currently
18 going on in pools for the most part. Some storage is
19 clearly being conducted outside of pools, dry storage,
20 dry cask storage.

21 The question of how long can you keep this
22 up and reasonably assure health and safety, et cetera,
23 substantially deals with I guess I would say three
24 items: integrity of the fuel itself; some mechanism
25 of protecting the environment from releases; and then

1 finally how are you going to move the material from
2 where you've stored it temporarily to wherever it's
3 supposed to go?

4 The first two questions turn out to have
5 been looked at in the last 20 years by a fairly large
6 number of different folks. The most recent and
7 germane, I think, conclusion is to be found in the
8 NRC's rulemaking, waste confidence rulemaking where
9 someplace -- Bob Bernero handed me a document
10 fortunately just before I got here; - Someplace there's
11 a statement that it looks like you can store this
12 material for 100 years with reasonable assurance, et
13 cetera, et cetera. The implication is, and I haven't
14 looked in detail, but the implication is that somebody
15 has gone through and done the technical analysis. I
16 would be startled if we couldn't find in the
17 literature considerable technical information that
18 deals with the litany of issues that somebody might
19 raise, specifically things like how long are we likely
20 to be able to maintain the integrity of the fuel
21 cladding, what kind of problems do we get into if, in
22 fact, we store this in a pool and the fuel cladding
23 breaches, an issue which is currently real and being
24 dealt with. How easy is it to use natural convection,
25 as we do in the case of cask storage, and capture in

1 case of an accident the krypton-85 that might escape?
2 What are the risks that are involved in that
3 particular issue? So, there are a whole series of,
4 I think, integral technical questions that can be
5 addressed, have been addressed to a large extent.

6 So, I think it's fairly straightforward
7 to get you an answer to the question you're asking.
8 I sense at the moment that the answer would be yes,
9 it's certainly doable.

10 CHAIRMAN SELIN: One of the things that
11 for me as a newcomer to this that's particularly
12 important is not so much to review the individual
13 pieces, although that would be helpful, yes, we've
14 looked at the dry cask, yes, the conclusions that the
15 field will come up with looks good to us. It's more
16 to do the top down, the systems analysis approach and
17 say, "If you really want to make a statement that says
18 that although spent fuel is a serious problem that's
19 getting larger, nevertheless the steps are in hand to
20 handle these things for the next 25, 50, whatever it
21 is. Here are all the questions you have to ask," and
22 then go on to the answers because this top down
23 approach is a little bit as you have done with the
24 three pieces. But to fill it in so much, at least for
25 me would be a source of either comfort or -- I'm sure

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1 you would find places where it'd say, "The
2 technological solutions are at hand, but in order to
3 realize them here are program things that have to be
4 done here, experimental things," what have you.

5 DOCTOR STEINDLER: I think PRAs and safety
6 analyses, which in fact start out the way you indicate
7 and then work their way through whatever information
8 they have in order to come to some kind of conclusion,
9 have been done. I would guess we could probably find
10 for you the kind of broad outline, top down outline
11 and then identify the topics that go into each one of
12 those. I think that's a doable thing.

13 The intent is for us to look at that
14 question, see what kind of information there exists
15 and perhaps either write you a note or converse with
16 you in some fashion.

17 CHAIRMAN SELIN: No, we ought to just --
18 you ought to do a little preliminary design to see
19 if the question is interesting or trivial or
20 impossible or all three at the same time, and sort of
21 what would be involved in addressing it. I don't want
22 you to just go off and spend many ^{years} ~~years~~ of work doing
23 something, but it's more of a hypothesis that you
24 would bring back to the Commission as a whole and then
25 we as a whole would look and say, "Would we like you

1 to look at it or not," rather than -- it's not an
2 assignment. It's more of a possibility.

3 DOCTOR STEINDLER: Well, it gets us
4 involved in the question of the monitored retrievable
5 storage facility and its role in relation to the
6 repository. I think we would probably back away from
7 the complexities of -the legal issue. I'll let
8 Commissioner Curtiss --

9 CHAIRMAN SELIN: You don't have to worry.

10 DOCTOR STEINDLER: -- handle that.

11 CHAIRMAN SELIN: But there are -- I mean
12 right now the MRS is thought of as an integral part
13 of the long-term -- that cost Chick Hecht his job.
14 I've got to stop doing that. It's such a funny line
15 that you can't -- you have to remember it's not true.
16 Rather than a mid-term solution.

17 COMMISSIONER REMICK: Mr. Chairman, I'm
18 not quite sure what your question was. I assume
19 you're not asking the Committee to reopen the waste
20 confidence decision at this point in time. It was
21 more a question of looking at the overall high-level
22 waste program, kind of the --

23 CHAIRMAN SELIN: Yes.

24 COMMISSIONER REMICK: Where are there
25 possibly holes, are they being addressed or what

1 should be addressed. Am I correct?

2 CHAIRMAN SELIN: Absolutely.

3 COMMISSIONER REMICK: Okay.

4 DOCTOR ^{Steindler:} ~~HINZE:~~ I think that's very
5 interesting because we haven't had the opportunity to
6 look at it. We've been really focused on so many
7 immediate problems that it's great to have this
8 opportunity. It makes it more interesting.

9 CHAIRMAN SELIN: I should make it clear.
10 I'm not asking you to do this. I'm asking you is
11 there sense in doing it and if you did it what would
12 be involved and then to come back to us as a
13 Commission to see if we wish to commission you to do
14 this.

15 DOCTOR STEINDLER: The reason for my
16 bringing out the waste confidence rulemaking is to
17 simply illustrate that that exercise has been gone
18 through to a large extent. So we're not plowing new
19 ground. We don't ask to reinvent the wheel and --

20 COMMISSIONER REMICK: I certainly agree,
21 Marty. I just wasn't quite sure I understood what the
22 question was.

23 DOCTOR STEINDLER: We don't intend to.

24 COMMISSIONER REMICK: Okay.

25 COMMISSIONER CURTISS: Because, in fact,

1 that might -- that effort which has been underway for
2 several years might be a good point of departure in
3 examining the framework that was employed on both
4 storage and disposal which the confidence decision
5 covers and taking a look at the issue from the very
6 beginning when the Court directed us to do this and
7 then up through the most recent evaluation. I thought
8 it would be a good point of departure for something
9 like this.

10 DOCTOR MOELLER: Well, I guess too a
11 question that could come up in this respect is do you
12 want us to look at more than spent fuel because the
13 problem, say, with solidified high-level waste would
14 be different.

15 CHAIRMAN SELIN: I don't know the answer
16 and my own personal interests are spent fuel in
17 reactors, but it doesn't mean that other members of
18 the Commission might, if they were interested in
19 looking at the topic at all, might not want to
20 redefine or broaden the charter. What would be useful
21 is to say, "These are easy questions. These are hard
22 questions, but interesting. These are difficult. It
23 would be difficult but not difficult to expand it here
24 and here's where we ought to contract it," and see
25 what comes out of that.

1 Commissioner Rogers and I have talked, and
2 to some degree Commissioner Remick and I have talked
3 in general about using our advisory groups to be an
4 aid to what would be talked about as a policy planning
5 function, to looking ahead and say, "Here are issues
6 that one ought to look at fairly broadly and see if
7 we have either the technical tools or the analyses or
8 the people on hand to address them when they come up,"
9 in addition to either the statutory or customary help
10 that you give to the staff on specific day-to-day
11 work.

12 DOCTOR MOELLER: Well, as I mentioned
13 yesterday in our meeting, it has been very helpful to
14 us to have received the questions from Commissioner
15 Curtiss and Commissioner Rogers. We hope we finished
16 Commission Curtiss' questions, but we're certainly
17 working on the performance assessment question.

18 COMMISSIONER ROGERS: The uncertainties,
19 I think you're working on as well.

20 DOCTOR MOELLER: Yes. Yes.

21 Well now, we did have several other items.
22 Do you want us to go ahead with those?

23 CHAIRMAN SELIN: Please go ahead.

24 DOCTOR MOELLER: Okay. The first one, we
25 had sent you or sent to the Commission, your ^{Chairman}

1 predecessor, our responses to the questions
2 accompanying working draft number 3 of the EPA
3 standards. I thought I would take a moment, and the
4 Committee agreed, to just brief you on several aspects
5 of our responses because we can see in looking at it
6 a month later that there might be places that people
7 could question what we had said or asked for further
8 expansion on it.

9 The first question that EPA asked was
10 whether we would recommend a 25 millirem per year
11 effective dose limit or a ten millirem a year
12 effective dose limit. We responded that we would
13 prefer the ten millirem. Now, people then, and I
14 could see them saying it to us, "Well, here you've
15 complained for several years about the stringency of
16 the EPA standards and then when you're given a choice
17 of a higher number or a lower number you choose the
18 lower number. What's wrong with you or what are you
19 doing?"

20 Well, our reasons for that were several,
21 and as we pointed out the biological effects of
22 ionizing radiation, as people analyze them they're
23 finding they're higher than they earlier thought. We
24 pointed out that the population in question may be
25 exposed to more than one source. After all, this

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1 repository is only one portion of the total fuel
2 cycle. You've got the uranium mill tailings and many
3 other sources of exposure and we didn't want to
4 allocate more than a proper portion to this particular
5 source. Then we felt that this does represent a
6 source that could last for many, many years. For
7 those reasons we chose the lower number.

8 If any of you have questions on that, I'd
9 be pleased to respond.

10 COMMISSIONER CURTISS: I do have a
11 question and it is really not -- it's not the question
12 that EPA asks, which is what do you prefer, ten versus
13 25. That's an interesting question, I guess. But a
14 narrower question and I think perhaps the broader
15 question that I'd like your comments on, and that is
16 this. Have you talked about or thought about the
17 broader question of whether the regulatory framework
18 warrants the establishment of an individual dose limit
19 either in addition to or in lieu of the containment
20 requirements that we currently have? In that context,
21 how would that affect the overall regulatory framework
22 and the objective that we have for the health effects
23 during the 10,000 year period?

24 We've spoken before about the concern of
25 laying one requirement on top of another and then

1 propagating conservatisms throughout the regulatory
2 framework, and I think you all have talked about that
3 in the past with great insight. Could you expand upon
4 that in the context of this particular requirement,
5 and as I say, beyond just the question of whether it
6 ought to be ten or 25?

7 DOCTOR MOELLER: My comment would be as
8 follows. The point is that the EPA standards, except
9 for the portion that's been remanded, are essentially
10 on the street or they are on the street and they seem
11 to have been pretty well accepted by the total public,
12 the public certainly in the United States. Those
13 standards have within them, as you well know, the
14 Table 1 with the release limits. They do not contain
15 specific limits for individuals. We long -- for many
16 months and for the first several years of the
17 activities of the Committee, we pleaded for EPA to
18 give consideration to an individual dose limit.

19 I think at this point in time I personally
20 am in favor of ceasing to give much more thought to
21 that particular subject simply because I believe the
22 EPA is locked into what they have and that it would
23 be sort of a useless exercise. Now, I'm not really
24 answering your question, but -- we have the Table 1,
25 we have the release limits. There are no dose limits.

1 They do not state the dose that anyone would receive
2 if these quantities are released.

3 Their reason for that, which I think is
4 justified, their reason for that is that by giving you
5 radionuclide release limits, we are reducing the
6 uncertainties. They claim that because you do not
7 have to deal with the portion of the exposure pathway
8 beyond the release of that quantity at the accessible
9 environment, or to the accessible environment. You
10 do not need to know how much goes into grass or milk
11 or fish or anything else; you just have that limit and
12 you're set with it.

13 We think if you did those calculations
14 that you would find the dose that individuals receive
15 is extremely low. We think it's probably just very,
16 very low. That's why we complained about it.

17 COMMISSIONER CURTISS: Let me ask the
18 question a little bit differently because --

19 DOCTOR MOELLER: All right.

20 COMMISSIONER CURTISS: -- because the
21 requirement clearly introduces a new element that
22 we're going to have to assess and litigate in the
23 context of the licensing proceeding. Has anyone
24 evaluated whether the establishment -- two things
25 really, whether the establishment of limit at either

1 ten or 25 would have an effect on health effects and
2 if so what that would be, either at the ten or 25
3 level, and would that alter in any way the design of
4 the repository as it's currently envisioned? How
5 would it change things?

6 DOCTOR MOELLER: I don't think it would
7 change it at all. I cannot see that it -- whether
8 it's ten or 25, that it would change anything. Now,
9 if I understand your question about -- let's say it's
10 25 or ten, either one. Would this result in a number,
11 small or large, of health effects, computed health
12 effects within the exposed population? I doubt that
13 it would --

14 COMMISSIONER CURTISS: My question is a
15 little bit different. Would the establishment of a
16 level at ten or 25 address health effects, prevent
17 health effects that would have otherwise occurred?

18 DOCTOR MOELLER: No, not in my opinion
19 because we have the limits on the radionuclide
20 releases.

21 COMMISSIONER CURTISS: Okay.

22 DOCTOR MOELLER: So I do not see it
23 changing anything.

24 COMMISSIONER CURTISS: Okay.

25 DOCTOR MOELLER: And even if you have the

1 ten or 25, the number of people -- you know, if that's
2 the maximum individuals who have immediate access to
3 the accessible environment, those numbers, at least
4 for the foreseeable future, are very small. So, as
5 you go beyond that, that dose is just going to go
6 down, down, down. So, the number of health effects
7 would not be affected.

8 COMMISSIONER REMICK: Did you consider at
9 all the question of whether it makes sense to allocate
10 a part of the overall fuel cycle exposure to one type
11 of facility, the advantages and disadvantages of that?
12 This would be just one part of the overall fuel cycle,
13 right?

14 DOCTOR MOELLER: Yes.

15 COMMISSIONER REMICK: Guided by 25
16 millirem.

17 DOCTOR MOELLER: Right.

18 COMMISSIONER REMICK: The question of
19 should one allocate to different segments of the fuel
20 cycle, a certain portion --

21 DOCTOR MOELLER: That's been argued, you
22 know, for years. Again, that was part of our choice
23 of the ten. If you follow EPA's limit of 25 millirem
24 for essentially the total fuel cycle, you would --
25 then I would think that ten might be a reasonable

1 allocation to this portion of it. But it's
2 interesting that groups such as the NCRP have
3 recommended that you not allocate or apportion the
4 dose to different specific sources within the
5 environment.

6 COMMISSIONER REMICK: It seems like
7 there's a possibility of unnecessarily tying your
8 hands at one part of a fuel cycle or another if we go
9 through and do this. I wonder if it's really
10 necessary to do that.

11 DOCTOR MOELLER: I fear it because you
12 have, for example, in EPA standards today, the
13 drinking water limit, which is four millirem a year.
14 Well, they've apportioned that amount to drinking
15 water. Well, water is the main exposure pathway for
16 a low-level waste facility, a high-level waste
17 facility, any kind of a waste facility. So you're in
18 a trap.

19 Then another place that you enter a trap
20 or a difficulty by doing this type of a thing is in
21 NESHAPS. There they allocated, I believe, ten
22 millirem -- EPA proposed allocating -- not only
23 apportioning not only a total of ten millirem to the
24 airborne pathway, but they've said that not more than
25 three of those ten can originate due to releases of

1 radio iodine. Well, you're just getting into more and
2 more difficulty.

3 COMMISSIONER REMICK: That was my concern.

4 DOCTOR MOELLER: You shouldn't do that.

5 COMMISSIONER REMICK: Yes.

6 DOCTOR MOELLER: Well, that was the main
7 point on that one.

8 CHAIRMAN SELIN: Before you get off that,
9 I'd just like to make one comment.

10 DOCTOR MOELLER: Okay. Sure.

11 CHAIRMAN SELIN: It's no secret that the
12 relationships between the Commission and EPA haven't
13 been quite as terrific as they ought to be. The
14 Commission has discussed this at some length and we've
15 taken the obvious conclusion that we'd be much
16 benefitted if we could take these individual issues
17 and not look at each one of them as a pattern of
18 philosophical disagreement, but take each on its
19 merits and the more that we solve, to use a phrase
20 from the arms control business, we could use these as
21 confidence-building measures.

22 So, your support on this or anything else
23 Commissioner Curtiss might ask you to support in the
24 EPA area would have two benefits in addition to the
25 obvious technical benefit. The more we can take some

1 of these issues and look at them directly and get them
2 out of the way, the more likely it is that all the
3 federal regulators will seem to be more coordinated
4 when we deal with the public at large. So, that's
5 very helpful.

6 DOCTOR MOELLER: And, sir, you know, with
7 due respect, I believe that it will be necessary for
8 you at your level to interact with Administrator Riley
9 at his level to really resolve these questions.

10 CHAIRMAN SELIN: That's relatively easy.
11 But the quality of our discussion about the radiation
12 level leaves a little to be desired. So --

13 DOCTOR MOELLER: We certainly can provide
14 backup for you on that.

15 CHAIRMAN SELIN: Fine. Thank you.

16 DOCTOR MOELLER: Well, then, our next
17 topic was the discussion of uncertainties which
18 Commissioner Rogers has already mentioned, and again
19 Doctor Steindler will offer a few comments on that.

20 COMMISSIONER REMICK: Excuse me. I just
21 made -- there was one other comment I wanted to make.
22 The staff has recently come out with a paper on
23 comments of the EPA and I presume you haven't had a
24 chance to look at those, but there are some
25 differences between staff positions and your

1 positions. I would just urge that in the interest
2 that we hope we can speak with one voice that you work
3 with the staff to see if those differences can be
4 resolved. It's certain to be helpful to the
5 Commission.

6 DOCTOR STEINDLER: I guess before we leave
7 that one altogether, - I might just make a comment.
8 There are problems of inconsistencies even within the
9 EPA regulations. If you look at the table that we had
10 just made a reference to and you ask the question,
11 "What does that represent in dose?" you've got to do
12 some estimating on populations and things of that
13 kind. But you're likely to be dealing in micro R or
14 micro rem, whereas here we're dealing in the ten
15 millirem. Admittedly the populations are different.
16 This is essentially the most exposed individual rather
17 than the whole wide population. But inconsistencies
18 of that general kind exist and are tough to unravel.

19 COMMISSIONER CURTISS: I'm sorry. Marty,
20 before you go on, there was one other question that
21 I had on the paper and your comment prompted it.

22 Do we have any information on whether
23 EPA's approach on the individual criterion would be
24 based upon the critical population group?

25 DOCTOR MOELLER: We should -- we have not

1 asked. We really should ask. I do not know. The way
2 their question was worded, it implied it was for an
3 individual. However, the International Commission and
4 our own National Council both recommend dealing with
5 a critical group. So, I presume EPA is looking at the
6 critical group. We have not asked. We should.

7 COMMISSIONER CURTISS: The question that
8 they asked in the Federal Register though seems to
9 suggest that it was an individual?

10 DOCTOR MOELLER: It did.

11 COMMISSIONER CURTISS: A maximally exposed
12 individual of some sort?

13 DOCTOR MOELLER: Yes. And even your own
14 Commission has chosen another path. In your revised
15 10 CFR Part 20, you're very careful to point out that
16 for the dose limit for the population, which would be
17 five milliseiverts or 500 millirem a year, you
18 indicated that you selected one milliseivert or 100
19 millirem a year because you, your staff or the states
20 or whoever the regulators were, none of them would
21 have the capability of identifying this maximally
22 exposed individual. So, everybody I know takes the
23 critical group path.

24 COMMISSIONER CURTISS: Okay.

25 DOCTOR STEINDLER: Well, let me address

1 then the issue of uncertainties. We are responding
2 to a draft paper that the staff put together which in
3 turn was put together on the basis of a question that
4 the Commission had asked the staff to, in effect,
5 address how they intend to handle uncertainties in
6 addressing the question of high-level waste disposal
7 in relation to the EPA criteria.

8 Let me start ~~by~~ by pointing out that
9 there are only a few other topics that have the same
10 level of importance as the issue of uncertainties in
11 the long haul. Licensing is going to center around
12 largely what are we going to do with uncertainties and
13 have they been reasonably resolved. We therefore view
14 that particular document as one in a series that deal
15 with a very important topic, so we spent some time
16 worrying about it.

17 Furthermore, we also looked at the charge
18 that the Commission gave as we read it, and we
19 interpreted that charge in a very narrow fashion, that
20 in fact the Commission wanted to know what the current
21 approach was of the staff in dealing with
22 uncertainties. Not how to get rid of them, but what
23 are they going to do with them.

24 So, by way of background, let me just
25 relay for you or relate to you the history of this

1 exercise. SECY documents have been produced on
2 uncertainties or dealing with the general topic of
3 uncertainties since about 1986 when the high-level
4 waste repository licensing process began to get
5 formulated in a serious way. In '89, there was a SECY
6 document that was forwarded to the Commission that
7 dealt with the staff's view of how to implement the
8 probabilistic standards that the EPA had formulated.
9 The Commission reviewed that document and from that
10 document came the question back to the staff to ask
11 them to summarize the current approach in dealing with
12 uncertainties and implementing the EPA standards.

13 In June of last year, a draft SECY paper
14 was put together on that topic and we reviewed it, the
15 Advisory Committee reviewed it and forwarded some
16 comments back to the staff in August. A revised
17 version of that draft was submitted to us for review
18 in April of this year and in May of this year we
19 forwarded a letter to Bob Bernero with our comments
20 on it. It is that letter and that topic that we want
21 to talk about in a little bit.

22 Well, I think it's appropriate to then ask
23 what are the issues, what did we do when we looked at
24 the paper? We focused our attention on a number of
25 specific issues, but let me highlight four of them for

1 you. One, we pointed out to ourselves that the staff,
2 was asked to summarize its approach to dealing with
3 uncertainties rather than the much broader paper that
4 dealt with a number of other topics. Furthermore, we
5 believe that the questions also included what the role
6 of the staff was in uncertainties, vis-a-vis DOE and
7 the question of the role of DOE in handling
8 uncertainties was an important aspect of the paper as
9 it was written.

10 The third item was could we extract out
11 of that paper some organizing principle that gave us
12 a clue as to what the bases were that the staff used
13 to try to formulate its notions, and then finally we
14 had heard for some years, both before the Advisory
15 Committee was put together and, of course, after, that
16 rulemaking was going to be used to in some fashion
17 alleviate the problems and handle the problems and
18 manage them of uncertainties. We tried to extract out
19 of that paper some clues as to just what that really
20 meant.

21 From that whole set of questions, we found
22 that the staff in this draft paper, the second draft
23 now, had addressed some of these issues that we looked
24 at and we ~~formed~~^{forwarded} a transcript of our discussions back
25 and forth which we thought might be useful. But the

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1 letter that we sent to Bob Bernero pointed out some
2 unresolved problems. I guess one of the main
3 highlights that I would make for you is that the staff
4 in effect said it can't provide for the Commission an
5 agreed on methodology for characterizing and handling ~~of~~
6 managing the uncertainties.

7 Some other specific issues that were
8 raised in that paper ^{was} ~~with~~ _A that we had some difficulties
9 ^{which} ~~with~~ _A led us to the following kind of conclusions. It
10 seemed to us that the staff focused its attention not
11 on the uncertainties as they would be after DOE had
12 done whatever herculean efforts they are going to go
13 through in the licensing process, but in fact before
14 that. So there was some significant amount of
15 discussion on what DOE might do to alleviate the
16 uncertainties, such as getting more data. We didn't
17 think that that's what the Commission had in mind.

18 It also was fairly evident that the staff
19 position paper, this draft, was going to suggest or
20 did suggest that expert judgment was not a suitable
21 alternative to obtaining data. We felt that was a
22 kind of a peculiar conclusion since that seemed not
23 only self-evident but as a matter of policy, of
24 course, that sometime or another when the licensing
25 document is finally put together you have run out of

1 time collecting information by experiments or whatever
2 have you, and you have to resort to -- and I use that
3 term advisedly -- the use of expert judgment to be
4 able to obtain some conclusions.

5 The staff did organize the world of
6 uncertainties into three buckets, if that's again an
7 allowable term: data-uncertainties, which we all I
8 think can understand fairly well; uncertainties of
9 future states, which is fairly obvious; and then they
10 addressed the issue of uncertainties of models. We
11 had some difficulty in separating uncertainties of
12 future states and models since ^{the} future state of the
13 repository environment generally is described only by
14 models. We don't have any other options. But
15 nevertheless, that was one of the few fundamental
16 principles that we could extract from that paper that
17 showed us where the staff was coming from.

18 There was some considerable discussion in
19 that paper on the removal of uncertainties by the NRC.
20 While we certainly would agree that removal of
21 uncertainties in the regulatory framework, clarifying
22 languages, defining terms, et cetera, is a role that
23 the NRC should play, ^{Other} other than that, it was not
24 obvious to us that the staff of the NRC has a role in
25 removing uncertainties. It seemed to us that DOE is

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1 the place where that kind of thing ought to be done.

2 Finally, we were disappointed in not being
3 able to get a better handle on the role of rulemaking
4 in the uncertainty issue. We still find that that's
5 missing at this stage of the game.

6 Well, let me not go on too much longer.
7 It seemed to us that it's important to move fairly
8 expeditiously along this path. Expert judgment is
9 currently being applied by DOE and others in the high-
10 level waste domain and it would be most useful to get
11 a handle on what the staff views as the fundamental
12 principles. So, one of the things that we pointed out
13 in our letter was that there is certainly a need to
14 develop a strategy, a fundamental plan^{ning} document that
15 says, "Here's how we intend -- we the staff intend to
16 respond and handle a broad range of uncertainties."

17 We are, by the way, well aware that some
18 of the thinking of the staff simply did not get
19 incorporated into this draft document and therefore
20 this is not to be taken as a severe criticism of the
21 staff. It's more a criticism of the paper per se.

22 Well, in conclusion, we do not now see a
23 strategy evident in that document on how the staff is
24 going to handle uncertainties. Residual uncertainties
25 specifically, technical residual uncertainties more

1 specifically. There is a great deal of work being
2 done by the Center and others on removing regulatory
3 uncertainties, which are really the domain of the NRC,
4 before the licensing process starts. That remains to
5 be seen whether that's going to be entirely
6 successful, but there's a lot of work going on in that
7 area. We nonetheless hope that the staff can address
8 the question how are they going to solve this problem
9 fairly quickly and perhaps issue another paper or make
10 some modifications or handle it in some other fashion.

11 I'm open for questions or comments or
12 discussion.

13 COMMISSIONER ROGERS: Yes. Well, just a
14 little bit of -- I haven't seen the SECY paper on
15 this. Does the staff deal in that paper with not just
16 the uncertainties in the models, but the uncertainties
17 in the results produced by the models as well as the
18 uncertainties in the models and how they relate to
19 each other? I guess you've said it, but it seems to
20 me a very important follow-on to that is how these
21 uncertainties are incorporated into the rulemaking
22 process. It seems to me that ultimately it has to
23 find its way in and it's my general impression that
24 one of the things that we have the most difficulty
25 dealing with is precisely that, how rules reflect

1 uncertainties in models and uncertainties in results
2 of those models. I think that's going to be an issue
3 that will keep coming up time and time again in the
4 future and it strikes me as one of the most difficult
5 couplings of the technology and the legal profession,
6 how to bring these two together and to make a
7 statement that is workable, enforceable and so on and
8 so forth that fully reflects the reality, the
9 technological realities of uncertainties and models
10 as well as the uncertainty and the data that go into
11 those models. There will always be uncertainties of
12 data, to some degree. But it seems to me that those
13 are quite different, obviously, in their nature from
14 the uncertainty of the model in which you plug this
15 data and then how you reflect that in the rulemaking
16 that follows from the technological work.

17 I wonder what your impression is so far
18 of whether what you're suggesting to the staff will,
19 in fact, take it that far.

20 DOCTOR STEINDLER: By itself, what I'm
21 suggesting here is a much more narrow focus. But you
22 will hear yet this afternoon a discussion on expert
23 judgment. We tended to integrate the commentary that
24 we have on this draft SECY paper, and it's only a
25 draft, with what you'll hear from Paul Pomeroy on

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expert judgment. Those two are not separable, in fact.

I think the issue is complex enough so that even if a good policy strategy is defined by the staff in how to deal with uncertainties, there will still remain two aspects of a model that have to be addressed, that will tend to be addressed separately. One is the impact of uncertainty in data that you feed into the model. And then, two, the fundamental question is, in effect, does that model represent the real world and does it do it adequately? Or, to put it somewhat differently, how adequately does it do it?

There, I think the performance assessment folks will be able to -- should be able to address that question by doing an exercise in modeling and then asking somebody in the laboratory to describe the results of some experiments which should in some fashion or another be correlatable with that model. That's a tricky business, as I'm sure you can appreciate. If the same folks are doing -- as I've said before, if the same folks are doing the modeling as the ones that are doing the design of the experiments, you wonder about the separation of church and state, so to speak. But it can be done to the extent that complex models are testable in that

1 fashion.

2 But expert judgment is ultimately, and I
3 think Paul may address that issue, is ultimately going
4 to have to be used in some fashion or another to
5 decide.

6 COMMISSIONER ROGERS: Well, how this
7 ultimately is translated into rulemaking, it seems to
8 me, is something I'm extremely interested in because
9 I see this as one of the fundamental problems of
10 technological regulation. What happens is it seems
11 that all of these exercises are gone through at some
12 level and ultimately something emerges in the way of
13 a rule that has a number in it. One then forgets all
14 of the uncertainties, all of the ranges of
15 consideration that led to that number and one doesn't
16 know what to do with the number. It's sort of like
17 reducing everything to one number, then forgetting the
18 number. It's almost that bad.

19 I just wonder if there's any way in which
20 you could bring to bear your wisdom on this subject
21 to some extent without getting totally bogged down in
22 doing so.

23 DOCTOR STEINDLER: It's not obvious that
24 we can.

25 CHAIRMAN SELIN: The trouble is you need

1 somebody with a Ph.D. in probability theory and a
2 great interest in the law.

3 DOCTOR STEINDLER: We can get one or the
4 other.

5 DOCTOR POMEROY: Could I just address one
6 aspect of that question? I was just reading a
7 revision to one of DOE's study plans relating to
8 magmatic processes at Yucca Mountain. After you go
9 through the process of getting the uncertainties in
10 the models and after you go through the process of
11 getting the uncertainties in the outcome, then -- if
12 I can read this, it's a little bit complicated -- but
13 lastly because in essence the data can be biased by
14 the number and selection of models, expert opinion
15 will be used to weight the suitability of each model.

16 So, you have another layer of complication
17 that what you're going to see is perturbed by a
18 weighting function that may be very difficult unless
19 it's explicitly called out to evaluate.

20 COMMISSIONER ROGERS: And then, of course,
21 there's another weighting factor that you can apply
22 to the experts themselves.

23 DOCTOR POMEROY: That's correct. We'll
24 get to that.

25 DOCTOR MOELLER: Any other -- no? Well,

1 then, the next item on our agenda is the discussion
2 of expert judgment and Paul Pomeroy will cover that.

3 DOCTOR POMEROY: Well, the broad question
4 here is the role of expert judgment in addressing
5 uncertainty. The Committee initiated its evaluation
6 of that role with two working group meetings during
7 the last several months. We've concentrated initially
8 on how expert judgment might be used throughout the
9 licensing and pre-licensing processes and on the
10 methodology that could be used for the formal
11 elicitation of expert judgment. We've also considered
12 the staff's role in ensuring that expert judgment is
13 properly used throughout the process.

14 What I'd like to do today is provide a
15 brief summary of some initial conclusions and a few
16 initial recommendations regarding the use of expert
17 judgment in the decision-making process related to the
18 performance of a repository.

19 Two general statements. Expert judgment
20 has played and will continue to play an increasingly
21 important and I think necessary role in the decision-
22 making process. Its major role there is not greatly
23 different from the role that it plays in probabilistic
24 risk assessment for nuclear power plants and in many
25 other studies.

1 The expert judgment can be implicit, the
2 kind we're used to thinking about, I think, and we
3 sometimes refer to that as expert judgment, or it can
4 be explicit, where the judgments, subjective
5 probabilities, assessments, and the underlying bases
6 for the assessments of the experts are formally
7 elicited and extensively documented.

8 According to most of our participants, the
9 explicit elicitation of expert judgment of numbers of
10 individuals, and there will be large numbers of
11 individuals involved here, should and will be utilized
12 in critical decision-making areas for a number of
13 reasons, and those reasons include the complexity of
14 the issues involved, a desire to encompass a full
15 range of prevelant opinion and we'll come back to that
16 in a moment, the need for careful documentation in
17 those key areas, the need to demonstrate compliance
18 with the probabilistic standard which in turn requires
19 the assignment of quantitative probabilities, and
20 finally of course a lack of definitive data.

21 The formal elicitation process can clearly
22 document the opinions and uncertainties of the experts
23 as well as the bases for the judgments that they've
24 made and clearly lay out the uncertainty for the
25 decision makers. It should be remembered, though,

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1 that the elicitation really represents only a snapshot
2 in time of prevalent opinion. It's not necessarily
3 a way to reveal the truth.

4 There are several other common threads
5 that arose, ideas that arose in the course of our
6 meetings. I'd like to just share a few of those with
7 you to lead into our recommendations on this.

8 One of them has to do with a question.
9 One of the concerns that the Committee had initially
10 was that the explicit elicitation of expert judgment
11 could be substituted, not used in connection with, but
12 substituted for data gathering and data analysis
13 during site characterization and the licensing
14 process. Another way to state that and perhaps
15 differently is that explicit expert judgment for
16 critical issues in the licensing or decision-making
17 process should be relied on only when it is the best
18 or when it is the best or only method of resolving
19 technical problems. It should not be used instead of
20 hard data, but rather in conjunction with that data.

21 The second point that came up over and
22 over again was that the evaluation and analysis by the
23 decision makers themselves is a non-trivial task and
24 requires a lot of care and planning and delving and
25 looking at documentation, and it requires resource^s.

1 The explicit formal elicitation should not be
2 conducted simply as a poll of experts, but it should
3 include explicit clarification and documentation of
4 the principals, the reasoning, and the quality of the
5 data on which the judgment is based.

6 There are a few other issues here, but I'd
7 like to go to the last one in the interest of time,
8 and that is that the methodology for formally
9 eliciting this expert judgment can itself
10 significantly modify the result and because of that
11 our first recommendation would be that the staff first
12 of all seek consensus on an appropriate methodology
13 that minimized that effect and secondly promulgate
14 some guidance on the utilization of that particular
15 methodology and we believe that there are several
16 areas that that should address, mainly the
17 identification and selection of experts and issues,
18 the elicitation process and how it's carried out, the
19 appropriate ^{weighting} ~~weighting~~ protocols to come back to ^{weighting} ~~weighting~~
20 for experts and alternative models, the aggregation
21 of the results from groups of experts, and the
22 appropriate level of documentation and the control of
23 the potential influence ^{that} ~~of~~ the normative experts --
24 these are the people who are experts on eliciting
25 expert judgment -- have on the outcome, and they do

1 have a significant impact on the outcome.

2 We recognize that even if we promulgate
3 this guidance that responsible parties can and will
4 bring up legitimate methodology questions during the
5 licensing process, but if we can agree on the
6 appropriate methodologies for the use of this expert
7 judgment and we can establish them through staff
8 guidance, our discussions during the licensing process
9 at least can focus on the judgments themselves and on
10 their bases rather than on the methodology.

11 Our intention here is to anticipate a
12 future problem and attempt to minimize it through
13 timely staff action. That really leads to and comes
14 into our second conclusion, which is that the staff
15 should prepare guidance also at an appropriate level,
16 whatever that is, for the applicant and the other
17 interested parties on the appropriate use of and
18 reliance on explicit expert judgment. And as part of
19 this guidance, the staff should develop the criterion
20 that they will use, going back specifically to what
21 we said in the uncertainties letter, to analyze,
22 evaluate, and ultimately either accept or reject the
23 information that's drawn from the expert judgment.
24 We say that because we don't have a clear document
25 that tells us right now what the staff position is on

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1 the proper role of expert judgment in this process.

2 Our third recommendation has to do with
3 the quarterly development and iterative utilization
4 of the staff's performance assessment capability to
5 identify those areas where formal expert judgment is
6 critical in the decision-making process. If we can
7 do that, that will allow us to focus on those areas
8 in the applicant's submittal and we intend to pursue
9 that matter further during our evaluation of the
10 staff's capability in performance assessment and
11 modeling that Commissioner Rogers has requested.

12 In the future we'll continue to monitor
13 developments in this area as well as the overall
14 uncertainties area, and I'd like to stop there.

15 CHAIRMAN SELIN: I'd just like to make a
16 couple of -- really, three observations. The first
17 is expert is really a very vague word. I assume
18 you're using that in a Delphi sense of having people
19 of an expert opinion asking different people the same
20 -- you know, trying to calibrate people in advance,
21 coming up to a systematic way of bringing these
22 opinions together, not somebody hiring an expert as
23 a witness who gives a partisan testimony that comes
24 through. In other words, to use the experts that
25 would be involved in the rulemaking to get -- for us

1 to get a broad range of opinions and put them
2 together, not just to have each adversarial member
3 come up with his own experts to negate each other's
4 experts.

5 DOCTOR POMEROY: I think what we're going
6 to see is that there will be a large number of experts
7 that are rather carefully selected by the applicant,
8 by the other interested potential intervenors, and I
9 think that the common situation that I see arising in
10 any case is in the case of residual uncertainty where
11 groups of well -- two groups, two or more groups of
12 well-respected individuals base their judgments
13 entirely on the same fundamental database and come out
14 with differing conclusions, one of which may be on one
15 side of the standard and one which may be on the
16 other. I think those people have to be chosen quite
17 carefully, but the choice of the people in itself of
18 course controls -- can control the result that you get
19 and we would like to have some staff input on that.

20 DOCTOR HINZE: I might add that there is
21 still subjectivity once you have this aggregation of
22 results from the expert opinion, and one of the things
23 that I'm concerned about is how do we evaluate the
24 expert opinion, and it seems to me we've discussed
25 this as a committee as to the staff providing guidance

1 which would provide some clue as to the validity, and
2 that's a tough word to deal with, but the uncertainty
3 in the results that come out of the expert opinion
4 because of the, as Doctor Pomeroy has pointed out,
5 because of the control that can be imposed upon or
6 that really can be part of the process depending upon
7 the normative analysis.

8 COMMISSIONER CURTISS: Just a follow-up
9 on the Chairman's point here, do you in your focus on
10 how you'd approach expert judgment, do you -- this may
11 go beyond the scope of what you've really looked at,
12 but do you view this process as one that would be
13 employed for assisting the staff in reaching their
14 conclusions on whether the application is acceptable
15 in those areas that this process would cover or do you
16 view it as a decision-making process that would
17 supplement, complement or supplant in some respect the
18 decision-making responsibility that let's say the
19 licensing board would have in a case like this?

20 DOCTOR POMEROY: Let me answer the last
21 part first. I don't see this at all as a substitute
22 for the licensing board functions. I think our review
23 system both at the staff level and the licensing board
24 function and at your level works fairly well and I
25 think it can be carried out. At all of those points,

1 expert judgment is going to be exercised. Implicit
2 expert judgment is going to be utilized, just as we
3 always use it in many everyday activities.

4 I don't -- let me withdraw that and stay
5 there.

6 CHAIRMAN SELIN: The reason these are
7 important questions - -- there really are two
8 observations I'd like to make and then we need to move
9 on to one other thing.

10 The first is expert judgment is almost
11 antithetical to expert witnesses. In other words, if
12 I understand correctly, you're talking about a process
13 whereby a range of views is fairly carefully
14 solicited. There's some weight put on each of the
15 range of views and there's a process for distilling
16 some kind of, if not a consensus, a range of
17 uncertainties. These expert witnesses are just
18 adversaries and they don't provide expert judgment.
19 Or, put a different way, nobody can control the a
20 priori probability of people coming up to cover these
21 different views. And I think you have an interesting
22 thought there I hadn't thought about.

23 The other point I was going to make is
24 just to come back to what you said earlier. You sort
25 of passed it by because you assume everybody realizes

1 this, but this is what you do after you run out of
2 data and after you run out of information. You don't
3 substitute it for data and for information. You're
4 formally getting to the things that are not observable
5 or at least not observable in a real amount of time,
6 and I'd like to stress that point just over and over
7 again.

8 DOCTOR POMEROY: There are some real
9 tricky problems at that point. Of course, there are
10 going to be those -- exactly that kind of set of
11 problems that will exist. Not all of those perhaps
12 are properly solved by the use of experts.

13 CHAIRMAN SELIN: But if you can get the
14 data or do the calculation, you don't ask people how
15 much is two and two.

16 DOCTOR POMEROY: We're with you.

17 COMMISSIONER ROGERS: Well, it's really
18 just exactly that point, the point that you made that
19 it should only be used where there's really no other
20 way, that it's not a complementary way. It's not a
21 second way that you compare with an analytical way.
22 It's the only way.

23 If you can restrict the use of experts'
24 judgments to those situations where it is the only
25 way, there's no other way, there's no data, there's

1 no model that anybody agrees on, at least that --
2 there's something, but there's such a diversity of
3 views that you have to resort to something besides the
4 classical ways of tackling a technological problem -
5 - and that if you really narrow it to that, then it
6 should never be a -- really ever come into the breadth
7 that you would -- of-opinion that you would expect
8 from an expert witness that is a hired gun to support
9 a particular position, but only to look very narrowly
10 at a narrow technical area of some sort where there
11 just isn't enough information to make a valid
12 classical analysis.

13 CHAIRMAN SELIN: It's the opposite of
14 Taoism. It's the "no other way."

15 DOCTOR POMEROY: I'd just comment that one
16 of the presentations that we heard which was extremely
17 interesting regarded WIPP, and they have studied the
18 human intrusion problem from the viewpoint of expert
19 judgment, that is they've convened four panels of
20 experts and asked them questions about the future
21 states of society. It's a very interesting
22 undertaking. It is not the methodology that we would
23 suggest utilizing in conforming with the standards.
24 We would much prefer the three bucket approach.

25 But their study is interesting, and it is

1 interesting because in my estimation that's an area
2 where at least the amount of data that there is
3 available on whether the future state of society will
4 be at a higher technological level or a lower
5 technological level or the same technological level,
6 the amount of data for that kind of a decision when
7 you're asked to put a probability between zero and one
8 on them for each one of those potential conditions is
9 very, very small.

10 CHAIRMAN SELIN: I'm sorry. We're
11 actually out of time, but I really would like to see
12 if you can give us a capsule report on your visit to
13 the Waste Center.

14 DOCTOR MOELLER: Fine. Thank you, sir.
15 We'll do that very briefly.

16 We went down on June the 26th through the
17 28th. We did visit the Center for Nuclear Waste
18 Regulatory Analyses.

19 In a nutshell, our overall impressions
20 were very favorable. We believe they have assembled
21 an intelligent, enthusiastic team. Communications
22 among the several groups at the Center appeared to us
23 to be very good. Their programs are integrated. They
24 have adequate office and laboratory space. In fact,
25 the Southwest Research Institute has gone to great

1 pains and great expense for themselves to provide that
2 space.

3 We also were pleased to see that they're
4 increasingly publishing papers. They're appearing at
5 national and international meetings. These are papers
6 in peer review ^{ed} journals. And they're even organizing
7 symposia and so forth.

8 We then looked in detail at the operations
9 and we came up with a number of criticisms. We will
10 be summarizing those in a written report to you. I'll
11 give you just one or two of them.

12 We felt that we needed to hear more about
13 how they assign priorities to their work. What is it
14 that determines what's the most important thing to
15 work on?

16 They are working on performance
17 assessment, as a second item. We're pleased to see
18 that. We hope they can move rather rapidly now in
19 this area. It's still very difficult to recruit
20 people. We found that they -- we recommend that they
21 give a little more attention at validation of the
22 models and so forth that they're using in the
23 performance assessment activities.

24 We reviewed what they call their
25 "systematic regulatory analysis," and we have

1 questions on that. The staff is going to appear
2 before us at the next month's meeting and clarify
3 those issues, so we'll be in good shape there.

4 As a last item, we encouraged them to be
5 a little more innovative or to take a few more chances
6 in terms of developing new analytical capabilities and
7 so forth. For example, they seemingly have stuck with
8 models and methods of analyses for a saturated
9 environment, whereas Yucca Mountain is unsaturated.
10 Well, it's easier to do saturated because others have
11 done it. It's hard to do unsaturated. Well, we want
12 them to get busy and get into that area.

13 We, finally, believe that they may need
14 more computer support. Well, not necessarily them.
15 They seem to be in pretty good shape, but your own
16 staff is not able today to tie in and to have data
17 links with them or to call up and exchange information
18 or to run models and so forth. We'd like to see that
19 capability or that problem solved.

20 And, as a last item, we thought it would
21 be nice if the Center could be provided with some
22 capital funds so that they would have more freedom in
23 purchasing equipment and so forth beyond their regular
24 budget.

25 CHAIRMAN SELIN: Thank you very much,

1 Doctor Moeller.

2 Thank you to all of you.

3 As you know, we put a lot of eggs in that
4 one basket and so we'll be looking forward to your
5 report and to the follow-on report. The staff reports
6 to us quite frequently on not only the individual
7 projects but the Center, and that's of great deal of
8 interest.

9 Johnny Paar used to have a line. He said
10 "If you want to get somebody indebted to you, let him
11 do you a favor," so I guess we're indebted to the
12 Center by that definition and we need to be very
13 closely apprised of what they're doing since so much
14 of what we will be using in this area will be
15 depending on this.

16 DOCTOR MOELLER: Well, they really want
17 to do their best. They welcome guidance. I think if
18 we all work together, they'll do an outstanding job.

19 CHAIRMAN SELIN: Thank you for your
20 general report.

21 Commissioners?

22 COMMISSIONER REMICK: First, a little bit
23 of background and then a question. The last time the
24 Commission met with the Center, the Center personnel
25 and our staff were at the same table at the same time.

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1 And I applaud that, because they are our captured
2 laboratory as an FFRDC, and I was pleased with that.

3 When the staff made their presentation of
4 ongoing activity and successes in the program, I
5 pointed out to the staff though that there was no
6 mention of where the Center had made a contribution
7 to that success. And my concerns were two-fold at the
8 time. One, people like to get some visibility and
9 acknowledgement for their contributions. The other
10 is, if we -- if they are making contributions and we
11 don't recognize it, it's hard for us to justify this
12 large expenditure of resources over a large period of
13 time.

14 Now, inherent in that question was the
15 assumption that they are making a contribution. Is
16 that -- do you agree with that, based on your visits
17 and association with them? Do you think they are
18 contributing to our overall high-level waste program?

19 DOCTOR MOELLER: They're definitely
20 contributing. I think you'll see far more
21 contributions in the future. We're on the threshold
22 of significant contributions.

23 DOCTOR POMEROY: And I think you'll see
24 that also in performance assessment areas
25 specifically.

1 CHAIRMAN SELIN: Commissioner Rogers?

2 COMMISSIONER ROGERS: Well, not on the
3 Center, but outside the Center I just wanted to return
4 to a subject that we had a communication with you on,
5 and that was the review of the regulatory guides --

6 DOCTOR MOELLER: Yes.

7 COMMISSIONER ROGERS: -- matter, as to
8 which ones you were doing and which ones ACRS was
9 doing. I just had a concern that it seemed to me that
10 your group is much smaller and yet you seem to be
11 taking on a bigger chunk of some of these, and
12 particularly there were two that it didn't seem to me
13 necessarily fit you that you've elected to take on,
14 namely the dose to embryo fetuses and instructions to
15 pregnant women, and I was just curious as to what the
16 basis was for your decision to take on those two.

17 DOCTOR MOELLER: It was mainly by default.
18 We are lining up some consultants who can certainly
19 help us, and it -- by default and by our desire to
20 assist the staff on this important task, and they have
21 worked very hard on the 12 or so regulatory guides and
22 I think we can in short order give them the advice
23 they need. I don't look at it as -- it's not going
24 to occupy very much of our time.

25 COMMISSIONER ROGERS: Well, it's just that

1 you do have so many things on your plate already.

2 DOCTOR MOELLER: Correct. No, we'll do
3 it in just a couple days at most in a working group
4 meeting.

5 CHAIRMAN SELIN: Commissioner Remick?

6 COMMISSIONER REMICK: Along that line, I
7 think you're aware of the fact that when I became a
8 Commissioner I was worried about the scope of the
9 Committee, and my concerns were I feel I need a lot
10 of help using your expertise and looking at the
11 expertise we have available on the staff in the
12 disposal of radioactive waste. Primarily, I feel I
13 need help in the high-level waste area and
14 particularly in the earth science area, so that's
15 where I need very much your advice.

16 And I want to applaud. I think you have
17 narrowed down your scope somewhat, but there are a
18 couple of issues like this and one you were looking
19 at in one of your working groups on the residual
20 contamination of sites and I wasn't quite sure how
21 that fit in with those.

22 And when I express my interests to the
23 Committee, you must realize I'm speaking just as one
24 Commissioner, but I applaud the fact that you've
25 narrowed your focus down to these important ones but

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1 I see some occasional drifting off and I have
2 questions like Commissioner Rogers of why. I don't
3 know if the staff is asking you to review that or
4 what.

5 DOCTOR MOELLER: Yes. In both the
6 regulatory guides and the residual contamination
7 limits, those are specific requests from the staff and
8 we'll try to keep our time to a minimum on those. We
9 recognize what the major issues are. Performance
10 assessment we're going to work hard on.

11 COMMISSIONER REMICK: Okay. Thank you.

12 CHAIRMAN SELIN: Thank you very much,
13 Doctor Moeller.

14 Thank you to the Committee.

15 We'll see you in a little while.

16 DOCTOR MOELLER: Thank you.

17 DOCTOR POMEROY: Thank you.

18 (Whereupon, at 3:14 p.m., the above-
19 entitled matter was adjourned.)
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