ACNW-0048
PDR 5/13/92

MINUTES OF THE 38TH ACNW MEETING
DECEMBER 18-19, 1991

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DESIGNATED ORIGINAL

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CERTIFIED MINUTES:
DATE ISSUED: January 22, 1992

MINUTES OF THE 38TH MEETING OF THE
ADVISORY COMMITTEE ON NUCLEAR WASTE
DECEMBER 18-19, 1991
BETHESDA, MARYLAND

The 38th meeting of the Advisory Committee on Nuclear Waste was held Wednesday and Thursday, December 18-19, 1991, in Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland. The purpose of this meeting was to discuss and take appropriate actions on the items listed in the attached agenda.

A transcript of selected portions of the meeting was kept and is available in the NRC Public Document Room at the Gelman Building, 2120 L Street, N.W., Washington, D. C. [Copies of the transcript taken at this meeting may be purchased from Ann Riley & Associates, Ltd., 1612 K Street, N.W., Washington, D. C. 20006.]

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 stated that the Committee had received neither written comments nor requests for time to make oral statements from members of the public.

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

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 November 23, 1991, Dr. Gail de Planque was confirmed by the Senate as one of the five Commissioners of the Nuclear Regulatory Commission. Dr. de Planque was sworn in on December 16, 1991.

- On December 10, 1991, the Nuclear Waste Technical Review Board (NWTRB) issued its fourth report to Congress and the Secretary of Energy.

- The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) are expected to sign a memorandum of understanding covering the development of

radioactive cleanup criteria for transuranic and other radionuclides. The Committee wishes to be kept informed on this activity because the NRC staff requested that the Committee address this issue.

- The Committee received SECY-91-394, Notice of Proposed Rulemaking to Revise 10 CFR Part 61 "Licensing Requirements for Land Disposal of Radioactive Waste."

- The Committee has been provided with a summary of the Yucca Mountain Team Meeting held on November 6, 1991. The summary includes a list of upcoming meetings of the NWTRB, DOE performance assessment workshops and DOE/NRC meetings on regulatory strategy.

- Mr. Leo P. Duffy was sworn in as Assistant Secretary for Environmental Restoration and Waste Management, DOE, on December 3, 1991.

II. STAFF TECHNICAL POSITION ON IDENTIFICATION OF FAULT DISPLACEMENT AND SEISMIC HAZARDS AT A GEOLOGIC REPOSITORY (Open)

[Note: Ms. Charlotte E. Abrams was the Designated Federal Official for this part of the meeting.]

Mr. Ronald Ballard, NMSS, introduced the presentation on the final draft staff technical position (STP) on investigations to identify fault displacement and seismic hazards at a geologic repository. He briefly discussed the high-level waste (HLW) program activities and how the planned technical positions fit into the overall program for HLW. He stated that the staff has also begun work on an STP on the analysis of faulting and seismic hazards.

Mr. Ballard pointed out that the staff, as a result of discussions during the ACNW Working Group meeting on faulting and seismic investigations, included in the handouts for their presentation at the full committee meeting, a viewgraph that deals with acceptable fault displacement in the repository area.

Dr. Philip Justus, NMSS, provided further discussion on some of the guidance planned by the HLW staff. The basis for the STPs is a need for guidance to the applicant on the collection of data, methods of analyzing data, and the development of models. The STP on analyzing data will include both deterministic and probabilistic methods.

Dr. Justus stated that DOE had requested guidance on the above items. In a clarifying statement, a DOE representative, Dr. Ardyth Simmons, stated that DOE had not requested this type of guidance.

Dr. Pomeroy also noted that based on the Working Group meeting discussions it did not appear that DOE desired this guidance.

Dr. Hinze suggested that the staff consider a change in the title of the STP for clarification. He recommended that the title be changed to either "faulting and seismic hazards" or "seismic and fault displacement hazards." Dr. Justus stated that the staff would review the transcript and consider all comments from the ACNW members.

Dr. Justus stated that "in considering the matter of fault displacement and how it may impinge on design and performance . . . prudence does suggest caution regarding design to accommodate fault displacement." He also stated that "if DOE contemplates designing for faulting, early resolution of the fault-related design and performance issues is needed and is requested by NRC."

Dr. Pomeroy emphasized that a clear statement from the NRC staff with regard to siting in the vicinity of a susceptible fault is needed. Dr. Justus stated that 10 CFR Part 60 does not preclude the applicant from submitting a license application if susceptible faults are present in the controlled area, but the applicant must show that those faults will not significantly affect the ability of the disposal facility to meet the performance objectives.

Dr. Justus stated that the STP dealing with analysis methods is planned to be issued for public comment in fiscal year 1992. An STP on tectonic models is being held in abeyance pending the outcome of the definition of anticipated and unanticipated processes and events by EPA in the EPA revised standards. The staff is also contemplating an STP on design input for faulting and seismic hazards. Any of these STPs can be further developed into rulemakings if so desired.

Dr. Justus also added a short discussion on the chronology of the development of the STP, and then introduced Dr. Keith McConnell, NMSS, who discussed the STP.

Dr. McConnell stated that the objective of the STP is to provide an acceptable approach to investigations for collecting sufficient data for input into fault displacement and seismic hazard analyses for the preclosure and postclosure periods. This constitutes what the staff believes to be an adequate level of investigations to identify fault displacement and seismic hazard. [He explained that the basis for the need for the STP is the staff's review of the DOE Site Characterization Plan (SCP).] The staff identified significant concerns with respect to faulting investigations in its review of the SCP and documented those concerns in the Site Characterization Analysis. The same concerns apply in the staff's review of the DOE study plans.

Another reason for issuing the STP now, according to Dr. McConnell, was that the DOE had initiated site characterization studies at Yucca Mountain in July 1991.

In the STP, the staff tried to outline the data necessary to fulfil the requirements of 10 CFR Part 60. They also tried to benefit from licensing and siting experience related to Appendix A of Part 100, but the STP clearly states that Appendix A does not apply to a high-level waste repository.

Dr. McConnell stated that the STP provides what the staff calls deterministic criteria for determining which faults will require detailed investigation by the licensee. Those criteria are purposely flexible in cases where a particular criterion is inconclusive, but the primary criterion is evidence of Quaternary movement. If it can be shown that the fault did not move in the Quaternary period, the fault can be eliminated from further investigation, unless assumptions change.

Dr. McConnell explained the methodology for the identification of fault displacement and seismic hazards. This process involves identifying the region to be investigated (geologic setting), the faults to be considered for detailed investigation in that region, and the faults that require detailed investigation (susceptible faults).

Dr. McConnell defined a susceptible fault as one that is 1) subject to displacement, and 2) affects the design or performance of the repository, and/or 3) will provide data for significant input to models used in assessments of the design or performance of the repository. He further defined the criteria for a fault "subject to displacement" as a fault where there is evidence of displacement during the Quaternary period. Where the Quaternary record is absent or is unclear, additional criteria to be applied are: 1) seismicity that suggests a direct relationship with a fault to be considered for detailed investigation, 2) structural relationship to a fault that meets one or more of the other criteria, and 3) orientation such that the fault is subject to displacement in the existing stress field.

The Committee suggested that the staff clarify the use of the stress field criterion and clarify the definition of the term "geologic setting." It was also suggested that the staff revise Figure 3 of the STP to show that, if it can be demonstrated that a fault has had no movement in the Quaternary, that fault can be eliminated from further investigation, assuming no evidence to the contrary arises during site characterization.

Dr. Pomeroy suggested that the staff consider another term for susceptible fault, because of the negative perception of "susceptible." He suggested that the staff redesignate them as "candidate

faults" and use the term "candidate" instead of "susceptible." Dr. Robert Hatcher, ACNW consultant, suggested that the staff consider a categorization scheme for faults in the STP with category 1 being those faults that are susceptible, category 2 being those faults that should be intensively studied, and category 3 being those faults that are of no further concern. The staff agreed to consider these suggestions.

The Committee asked Mr. James Wolf, NRC's Office of the General Counsel, to comment and explain the use of the term "relevant and material" in the STP. Dr. Pomeroy expressed particular concern with the use of that term in the technical discussion on page 8 of the STP. Mr. Wolf explained that the words "relevant and material" appear in the NRC regulations with "relevant" referring to the contents of the license application in which there is the stipulation that the applicant should include information that is relevant and material. Those words were added to the regulations to allow for exclusion of "clearly unimportant information." The words also are in the regulations to indicate that the content of the application should not only contain information sufficient to support the performance assessment, but should also contain information that might influence the judgment of the Commission. Mr. Wolf further stated that "material" means for the applicant to provide "a lot of information instead of just the information [the applicant] thinks we need."

Dr. Pomeroy asked that the staff attempt to clarify the wording related to "relevant and material" in Section 4 of the STP.

Dr. Abou-Bakr Ibrahim, NMSS, presented a discussion of the vibratory ground motion investigations section of the STP. For those investigations, the applicant should have a listing of all historically recorded seismic events that have affected the site. This list should include dates, coordinates of the epicenter, depth, distance, and time of origin. Also, it should include other factors such as magnitude, source parameters, and whether the event is an earthquake or an underground nuclear explosion. Other information needed is a correlation of earthquake epicenters with geological structures, identification of geologic structures significant for earthquake potential, identification of faults important as the basis for seismic design, determination of engineering properties of materials that underlie the site, determination of the regional attenuation of the vibratory ground motion, and investigation of the relationship between surface and subsurface ground motion at the proposed site.

Dr. Hinze suggested that the staff include some aspect of the three dimensional nature of the faults in the STP.

The staff concluded the presentation with a brief discussion of the significant changes that have been made to the STP in response to comments on the for-public-comment draft.

Dr. Pomeroy provided some recommendations based on the staff's discussion and the discussions at the Working group meeting on December 17, 1991. Those recommendations to the staff included: 1) to proceed with this STP in a very timely manner, 2) to write a short technical position on the acceptability of sites having susceptible faults, and 3) to move forward in a timely manner on the completion of the faulting and seismic analyses STP. Other points of concern that he listed for the staff included: 1) clarify the use of probabilistic techniques outside the controlled area for the identification of faults, 2) use a different term for susceptible faults; and 3) clarify terms such as "geologic setting" and "relevant and material."

Members determined that there was no need for the Committee to review this STP again before finalization. The Committee did request to review the companion STPs when the staff makes drafts available. The Committee also plans to complete during its January 1992 meeting a letter summarizing its recommendations on the STP on "The Identification of Fault Displacement and Seismic Hazards at a Geologic Repository."

Dr. Pomeroy commended the staff and all parties that provided comments on the STP for their efforts.

III. SYSTEMS ANALYSIS APPROACH TO REVIEWING THE OVERALL HIGH-LEVEL WASTE PROGRAM (Open)

[Note: Mr. Howard J. Larson was the Designated Federal Official for this portion of the meeting.]

After his introductory remarks on the derivation of this topic, Dr. Martin J. Steindler introduced Mr. Alex Radin, Chairman of the Monitored Retrievable Storage (MRS) Review Commission. Mr. Radin indicated that Congress created the Commission to report on whether an MRS was needed for interim spent fuel storage. Furthermore, Congress specified that DOE would not be permitted to proceed with MRS siting efforts until the Commission completed its report. Mr. Radin noted that the three member MRS Review Commission, which existed for about 18 months, produced the report entitled "Nuclear Waste: Is There a Need for Federal Interim Storage?". [Members of the Committee were provided with a copy of the report for reference.]

Mr. Radin stated that the date for initial repository operation changed from 2003 to 2010 after the Commission had issued its report. Had the Commission known this, their conclusions might

have changed somewhat. He also indicated that the MRS Review Commission regarded its role as more of a policy issue decision maker than a technical one. Further, he noted that although members of the Commission had different views, their findings were reported as unanimous.

Mr. Radin reported the conclusions of the Commission as follows:

1. From a technical perspective, both the No-MRS and MRS options are safe.

2. The net cost of a waste management system that includes an MRS would be lower than previously estimated because of delays in the expected date of repository operation. A longer interval between the completion of the MRS and the time of opening of the repository favors the economics for the MRS. This is particularly true beyond the year 2013 because at that time many plant licenses expire and, without interim storage, the cost for onsite storage of spent fuel at a nuclear power plant that has been shut down will be higher.

3. There are no single discriminating factors that would cause the MRS alternative to be chosen in preference to the No-MRS alternative. An MRS could provide for emergency storage should it be required in the future, would offer surge capacity to facilitate flow of spent fuel to the repository, and would initiate the assumption by the Federal government of the process for taking possession of spent commercial nuclear fuel. This latter item was deemed to be of particular interest to the nuclear electric utilities.

4. An MRS linked to a high-level waste repository as provided in current law would not be justified, especially in light of uncertainties in the completion time for the repository. Consequently, the Commission did not recommend a linked MRS as proposed by DOE.

5. Some interim storage facilities, substantially more limited in capacity and built under different conditions than the DOE-proposed MRS, are in the national interest to provide for emergencies and other contingencies. (In response to Dr. Hinze's question regarding "DOE-proposed MRS," Mr. Radin explained that the Commission proposed two smaller storage facilities -- one for 2000 metric tons of uranium (MTU) and the other for 5000 MTU vs. the proposed DOE MRS of 15,000 MTU capacity. Furthermore, these two smaller facilities were to be de-linked from the repository.)

Dr. Hinze asked about the advantages of an MRS insofar as the cooling of radioactive cores prior to their shipment to the repository. [Two letters on this subject were referenced by Mr. Radin. They were subsequently provided to the Committee. One letter was addressed to Senator Johnston and the other was addressed to Senator Breaux. Both were dated December 1989. It was noted, however, that if the repository opened in 2003, the average age of the spent fuel to be stored in it would be about 20 years. Further, storage would result in minimal incremental cooling.]

Mr. Radin summarized the recommendations of the MRS Commission, as follows:

1. Congress should authorize construction of a Federal Emergency Storage facility with a capacity of 2000 metric tons of uranium (MTU). It was believed that this facility could be funded by the Nuclear Waste Fund (NWF) and that existing Federal sites should be considered.

2. Congress should authorize construction of a User-Funded Interim Storage facility with a capacity limit of 5,000 MTU. Such a facility would provide storage only, and would be used in addition to the Federal Emergency Storage facility proposed above.

3. Congress should reconsider by the year 2000 the subject of interim storage to: (a) take into account uncertainties that exist today which might be resolved or clarified within 10 years, (b) consider developments that cannot be anticipated today, and (c) evaluate the experience with the two facilities recommended above.

In response to a question from Dr. Moeller as to why the Commission did not recommend a single 7000 MTU repository, Mr. Radin pointed out that the two smaller ones could be co-located. In addition, as noted in the proposal, the source of funding for each was to be different. It was believed that these two facilities could take care of interim storage needs at least until the year 2006.

Mr. Radin also summarized the Congressional hearings when the MRS Review Commission presented its report. Of particular interest to the Congressional committee was why the Commission did not directly proceed to recommend an unlinked repository instead of the two smaller facilities. It was explained that the reasoning behind not making such a recommendation was contingent upon four factors: 1) having an MRS available early, 2) the assumption of a significant delay in repository progress, 3) no linkages in time between the MRS and the repository and 4) no capacity limit on the MRS. Elaboration was provided on each of these points, with the observation made that if the repository were delayed to 2013, the

MRS inventory could be as high as 36,000 MTU. If the delay goes to the year 2023, then the inventory could be as high as 66,000 MTU. It was believed that Congress would not approve an MRS on such a basis.

Dr. Moeller asked whether the Commission addressed repository storage requirements from the aspect of fuel solely from commercial nuclear power plants or whether fuel from other sources, such as nuclear submarines and other DOD and DOE sources, was considered. Mr. Radin stated that only spent fuel from commercial nuclear power plants was considered.

Mr. Radin pointed out that little has been done with the Commission's report since it was issued, primarily, he believes, because it lacks a constituency -- DOE is committed to the 15,000 MTU repository, the industry believes an MRS should be fully funded from the NWF, and the environmentalists are opposed to an MRS since they regard it as a de facto repository. He also pointed out that, in the four public hearings held by the Commission, each witness was asked if they would oppose additional storage of spent nuclear fuel on-site. While the environmentalists did not want an MRS and believed fuel should be stored on site until a repository was ready, they would not commit to additional storage at a site.

Dr. Steindler asked if the Commission had considered co-location of the MRS and the repository. Mr. Radin replied that the Commission was expressly asked not to explore this subject.

Drs. Hinze and Moeller asked about the possible complexity of an MRS facility and were told that the perception of the Commission was that it would be a stripped down facility, similar perhaps to the dry cask storage facility at Virginia Electric and Power's Surry station.

Dr. Pomeroy asked if the Commission had investigated how many plant sites might be able to obtain political acceptance for on-site dry cask storage. While that question was not specifically addressed, Mr. Radin pointed out that there are already at least two U.S. sites that are utilizing such a storage concept.

In response to questions about the size of an MRS and the capacity of dry storage casks, Dr. Chu, (a former member of the MRS Commission staff) indicated that while each cask safely contained approximately 10 MTU he was not certain as to the physical area that would be encompassed by a postulated MRS.

The presentation was concluded with Dr. Moeller thanking Mr. Radin not only for his report on the MRS Commission's activities, but also for sharing his many insights.

IV. MEETING WITH THE NRC COMMISSIONERS (Open)

[Note: 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 morning, December 19, 1991.

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

- The reports to Commissioner Rogers on performance assessment and computer modeling capabilities for HLW and LLW disposal facilities
- A summary of the recent Working Group meeting on geologic dating
- A status report on the feasibility of a systems analysis approach to reviewing the overall High-Level Waste Program.

The meeting with the Commissioners began at 10:00 a.m. and was adjourned by Chairman Selin at 11:30 a.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 VI.]

V. EXECUTIVE SESSION (Open/Closed)

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

A. Reports

- Program Plan for the Advisory Committee on Nuclear Waste (Report to Chairman Selin, dated December 23, 1991)
- Geologic Dating of Quaternary Volcanic Features and Materials (Report to Chairman Selin, dated December 24, 1991)

B. Five-Year Plan Goals, Assumptions, Objectives, and Guidance

Mr. Fraley briefed the Committee on an updated draft of ACNW goals, assumptions, program objectives, and guidance for the NRC Five-Year Plan. The Committee provided several recommendations for consideration.

C. Proposed Amendment to the Federal Advisory Committee Act (FACA)

Mr. Fraley briefed the Committee on a bill recently introduced by Senator Glenn that would make significant modifications to the Federal Advisory Committee Act. The Committee concurred with the proposed comments advanced by Mr. Fraley. Comments from ACRS and ACNW will be submitted to the Office of the General Council.

D. Recruitment of ACNW Consultants

Mr. Major reminded the members to identify the disciplines and skills, e.g., hydrology, geochemistry, geotechnical engineering, and rock mechanics, that they deem necessary over the long-term, in order to fulfill the ACNW's mission to respond to the needs of the Commission.

Mr. Fraley also reminded the members to submit a list of the technical and trade publications where appropriate announcements of the needs of the Committee can be placed. In addition, the members were asked to identify those individuals who would fulfill the Committee's short-term and long-term needs for consultant assistance.

E. Committee Responses to EDO Memoranda

Dr. Moeller discussed how the Committee might respond, if appropriate, to the memoranda routinely received from the EDO commenting on each ACNW report submitted to the Commission. It was suggested that when the Committee and NRC staff differ on an issue, the staff should be invited to meet with the Committee to provide an opportunity for each party to clarify their position and hopefully resolve the issue. No Committee action was taken.

F. International High-Level Radioactive Waste Management Conference

The Committee endorsed Dr. David Okrent's request to attend the International High-Level Radioactive Waste Management Conference to be held in Las Vegas, Nevada, on April 12-16, 1992. Dr. Kenneth Foland, Ohio State University, also will attend this meeting at the behest of the Committee.

The Committee and staff are reviewing the paper on "Yucca Mountain Digital Database" that Mr. Carl Daudt has prepared under the auspices of the Committee and will present during this Conference.

G. Election of ACNW Officers (Closed)

The Committee reelected Dr. Dade W. Moeller and Dr. Martin J. Steindler to the positions of Chairman and Vice Chairman, respectively, for calendar year 1992.

H. ACNW Future Activities

- The Committee agreed to defer indefinitely the Working Group meeting (scheduled for January 15, 1992) to discuss the need for, and status of, proposed changes to 10 CFR Part 61.

- The Committee agreed to add a half day to the 39th ACNW meeting to provide adequate time to discuss long range plans and priorities. The 39th ACNW meeting will be held January 15-17, 1992.

- Drs. Moeller and Pomeroy requested that a meeting be scheduled with Commissioner de Planque on January 15, 1992, to discuss items of mutual interest. Drs. Steindler and Hinze requested that a meeting be scheduled with Commissioner Curtiss on the same day to discuss items of mutual interest.

- The members discussed a proposed agenda for the 44th ACNW meeting tentatively scheduled for June 24-26, 1992, in Richland, Washington. The members recommended that a public meeting be held either at Pacific Northwest Laboratories or the Richland Regional DOE Operations Office.

  Site visits will be scheduled before and after the meeting with representatives of the U.S. Department of

Energy Hanford Facilities and the U.S. Ecology low-level waste disposal facility. Possible discussions and tours include:

- Grouting Program for LLW
- N-Reactor Decommissioning
- Performance Assessment and Decontamination
- Waste Tank Stabilization and Hydrogen Control
- Hydrology Modeling Capabilities

- Dr. Pomeroy requested that a meeting be scheduled for him with the NRC staff to discuss the matter of "expert judgment."

- The Committee agreed to defer a status briefing on the Licensing Support System. The ACNW staff will provide the latest information to the members.

- The Committee agreed to invite Mr. Harold Denton to brief the Committee on SECY-91-365, International Standards, as it relates to nuclear waste.

- The Committee was informed that the NRC and the Environmental Protection Agency have reached concurrence in the development of joint guidance on mixed waste testing and storage. The Committee requested to be kept informed on this matter.

- The Committee discussed a recent report that indicated that the predominant dose to an intruder into an LLW disposal facility may be from radon-222. The Committee requested that the ACNW staff investigate this report and submit its findings to the Committee members.

- The Committee discussed the practice and procedures of the recycling industry in dealing with radioactive materials found in the recycling process. The Committee agreed to invite Mr. Michael Mattia, Director of Risk Management, Institute of Scrap Recycling Industries, to brief the Committee on this subject.

- The Committee agreed to defer indefinitely further work on the impacts of the Clean Air Act on uranium mill tailings and the proposed revision of 40 CFR Part 61, Subparts I, T, and W.

- Dr. Moeller informed the Committee that he was invited to speak at the Conference on State Radiation Control Program Directors on May 12, 1992. The Committee had no objections.

I. Future Meeting Agenda

Appendix III 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 at 4:50 p.m., Thursday, December 19, 1991.

Dated: November 26, 1991.

n C. Hoyle,

isory Committee Management Officer.

[FR Doc. 91-28906 Filed 12-2-91; 8:45 am]

BILLING CODE 7590-01-M

Advisory Committee on Nuclear Waste; Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 38th meeting on December 18-19, 1991, 8:30 a.m.—5 p.m., room P-110, 7920 Norfolk Avenue, Bethesda, MD each day. Portions of this meeting will be closed to discuss information the release of which would represent a clearly unwarranted invasion of personal privacy 5 U.S.C. 552b(c)(6). Notice of this meeting was published previously in the Federal Register on Monday, November 25, 1991 (56 FR 59304).

The agenda for the subject meeting shall be as follows:

A. Review the Staff Technical Position on the Identification of Fault Displacement and Seismic Hazards at a Geologic Repository.

B. Discuss the results of a Working Group meeting on concerns related to Faulting and Seismic Investigations of a proposed HLW repository site.

iscuss items of mutual interest with he Commission.

lection of Committee officers for CY 1992 (Open/Closed). This session will be closed as necessary to discuss information the release of which would represent a clearly unwarranted invasion of personal privacy.

E. Develop a response to Chairman Selin on a systems analysis approach to the storage of spent fuel.

F. Prepare a program plan for the next four months.

G. Prepare a report on Quaternary dating methods for volcanic features and materials.

H. 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.

Procedures for the conduct of and participation in ACNW meetings were published in the Federal Register on June 6, 1988 (53 FR 20699). In accordance with these procedures, oral or written statements may be presented by ers of the public, recordings will mitted only during those portions e meeting when a transcript is being kept, and questions may be asked only by members of the Committee, its consultants, and staff. The office of the ACRS is providing staff support for the ACNW. Persons desiring to make oral statements should notify the Executive Director of the office of the ACRS as far in advance as practical so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements. Use of still, motion picture, and television cameras during this meeting may be limited to selected portions of the meeting as determined by the ACNW Chairman. Information regarding the time to be set aside for this purpose may be obtained by a prepaid telephone call to the Executive Director of the office of the ACRS, Mr. Raymond F. Fraley (telephone 301/492-4516), prior to the meeting. In view of the possibility that the schedule for ACNW meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the ACRS Executive Director or call the recording (301/492-4600) for the current schedule if such rescheduling would result in major inconvenience.

Dated: November 27, 1991.

John C. Hoyle,

Advisory Committee Management Officer.

[FR Doc. 91-28907 Filed 12-2-91; 8:45 am]

BILLING CODE 7590-01-M

State of Maine: Staff Assessment of Proposed Agreement Between the Nuclear Regulatory Commission and the State of Maine

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of proposed agreement with the State of Maine.

SUMMARY: The U.S. Nuclear Regulatory Commission is publishing for public comment the NRC staff assessment of a proposed agreement received from the Governor of the State of Maine for the assumption of certain of the Commission's regulatory authority pursuant to section 274 of the Atomic Energy Act of 1954, as amended. Comments are requested on the public health and safety aspects of the proposal.

Exemptions from the Commission's regulatory authority, which would implement this proposed agreement, have been published in the Federal Register and codified as part 150 of the Commission's regulations in title 10 of the Code of Federal Regulations.

DATES: Comments must be received on or before January 2, 1992.

ADDRESSES: Submit comments to the Chief, Regulatory Publications Branch, Division of Freedom of Information and Publications Services, Office of Administration, Washington, DC 20555. Comments may also be delivered to 7920 Norfolk Avenue, Bethesda, Maryland from 7:30 a.m. to 4:15 p.m. Monday through Friday. Copies of comments received by NRC may be examined at the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC. A copy of the proposed agreement, program narrative, including the referenced appendices, applicable State legislation and Marine regulations, is available for public inspection in the NRC's Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC, telephone: (202) 634-3273.

FOR FURTHER INFORMATION CONTACT: Kathleen N. Schneider, State Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone: 301-492-0320.

SUPPLEMENTARY INFORMATION:

Assessment of Proposed Maine Program to Regulate Certain Radioactive Materials pursuant to section 274 of the Atomic Energy Act of 1954, as amended (the Act).

The Commission has received a proposal from the Governor of Maine for the State to enter into an agreement with the NRC whereby the NRC would relinquish and the State would assume certain regulatory authority pursuant to section 274 of the Act.

Section 274e of the Act requires that the terms of the proposed agreement be published for public comment once each week for four consecutive weeks. Accordingly, this notice will be published four times in the Federal Register.

I. Background

A. Section 274 of the Act provides a mechanism whereby the NRC may transfer to the States certain regulatory authority over agreement materials [1] when a State desires to assume this authority and the Governor certifies that the State has an adequate regulatory program, and when the Commission finds that the State's program is compatible with that of the NRC and is adequate to protect the public health and safety. Section 274g directs the Commission to cooperate with the States in the formulation of standards for protection against radiation hazards

[1] A. Byproduct materials as defined in 11e.(1)
B. Byproduct materials as defined in 11e.(2)
C. Source materials; and
D. Special nuclear materials in quantities not sufficient to form a critical mass

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

December 5, 1991

SCHEDULE AND OUTLINE FOR DISCUSSION
38TH ACNW MEETING
DECEMBER 18-19, 1991

Wednesday, December 18, 1991, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland

1) 8:30 - ~~9:00~~ 8:40 a.m.

Opening Remarks by ACNW Chairman (Open)
1.1) Opening Remarks (DWM/RKM)
1.2) Items of Current Interest (DWM/RKM)

2) ~~9:00~~ 8:40 - 12:00 NOON

~~(10:15-10:30~~ 10:15-10:25
BREAK

Technical Position on Identification of Fault Displacement and Seismic Hazards at a Geologic Repository (Open) (WJH/CEA)
2.1) Working Group Chairman's Report of 12/17/91 meeting - WJH
2.2) NRC Staff Presentation on the T.P.
2.3) General Questions/Discussion
2.4) Nature of ACNW Comments/Report requested

12:00 - 1:00 p.m. **** LUNCH ****

3) 1:00 - ~~3:00~~ 3:10 p.m.

Continue Discussions On a Systems Analysis Approach to the Storage of High-Level Waste (Open) (MJS/HJL)
3.1) Introduction (MJS)
3.2) Presentation by Mr. Alex Radin on Highlights of the Monitored Retrievable Storage Commission Study
3.3) General Discussion

~~3:00~~ 2:15 - ~~3:15~~ 2:30 p.m. **** BREAK ****

4) 3:~~15~~ 10 - 4:00 P.M.

Prepare Next ACNW Program Plan for the Commission (Open) (DWM/RKM)
- Four month program plan of anticipated ACNW activities

[= transcribed portion of meeting

5) 4:00 - 5:~~30~~ 50 p.m. Discuss Items for Meeting with NRC Commissioners (Open)
5.1) NRC Capabilities In Computer Modeling and Performance Assessment of High and Low-Level Waste Disposal Facilities (PWP/GNG)
5.2) Status of Current Effort on a Systems Analyses Approach to the Interim Storage of High-Level Waste (MJS/HJL)
5.3) Highlights of Recent Effort on Geologic Dating (WJH/CEA)

5:~~30~~ 50 p.m. RECESS

Thursday, December 19, 1991, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland

6) 8:30 - 9:30 a.m. Complete Discussion of Items for Meeting with Commissioners (Open)

9:30 a.m. DEPART FOR ONE WHITE FLINT NORTH

7) 10:00 - 11:30 a.m. Meeting with NRC Commissioners (Open)
One White Flint North - Commissioners Conference Room
7.1) Discuss topics noted above with NRC Commissioners

11:30 a.m. DEPART FOR PHILLIPS BUILDING

12:00 - 1:00 p.m. **** LUNCH ****

8) 1:00 - 3:00 P.M. Preparation of ACNW Reports (Open)
8.1.1) Discuss proposed Committee reports on:
8.1.1) ACNW Four-Month Plans DWM/RKM
8.1.2) Geologic Dating (WJH/CEA)
8.1.3) T.P. on Fault Displacement and Seismic Hazards (WJH/CEA)

3:00 - 3:15 p.m. ***** BREAK ****

9) 3:15 - 3:30 P.M. Election of ACNW Officers (Closed)
9.1) Select ACNW Officers for CY-1992 (DWM/RFF)
(This session will be closed to discuss information the release of which would represent a clarily unwarranted invasion of personal privacy)

10) 3:30 - 4:30 p.m. Anticipated ACNW Activities (Open) (DWM/RKM)
10.1) The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters as appropriate.
10.1.1) Set January '92 Agenda
10.1.2) Discuss Anticipated Activities through April
10.1.3) ACNW Consultants Recruitment Progress
10.1.4) Preliminary Agenda for 44th ACNW Meeting, Richland,Washington/ Hanford Facilities (June 25-27, 1992)
10.1.5) Discuss Staff Response to ACNW Expert Judgment Report (DWM/GNG)
10.1.6) Future Working Group Meetings

11) 4:30 - 5:00 p.m. Miscellaneous (Open)
11.1) Complete discussion of issues considered during this meeting as appropriate and items which were not completed at previous meetings as time and availability of information permit.

4:50
~~5:00~~ p.m. ADJOURN

APPENDIX III: MEETING ATTENDEES

38TH ACNW MEETING
DECEMBER 18-19, 1991

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

NRC STAFF		1st Day	2nd Day
Ron Ballard	NMSS	X	
Abraham Eiss	NMSS	X	
Dinesh Gupta	NMSS	X	
Bakr Ibrahim	NMSS	X	
Philip Justus	NMSS	X	
Harold Lefevre	NMSS	X	
Mike Lee	NMSS	X	
Donald Loosley	NMSS	X	
Keith McConnell	NMSS	X	
Peter McLaughlin	NMSS	X	
Mysore Nataraja	NMSS	X	
George Pirchard	RES	X	
King Stablein	NMSS	X	
John Trapp	NMSS	X	
James Wolf	OGC	X	

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

Joe Bannon	ERM
Michael Blackford	Pacific Tsunami Center
Sherwood Chu	NWTRW
Jeanne Cooper	DOE
Drew Corson	ICF
Jan Docka	Weston
Terry Grant	SAIC
Robert Hatcher	ORNL
Renner B. Hofmann	SWRI
Carl Johnson	Nevada
William McCaughey	Weston
Homi Minwalla	Weston

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

Richard Quittmeyer	WCFS/M&O
David Rasiussen	Weston
Gene Roseboom	Weston
Ardyth Simmions	DOE
Jay L Smith	EEI/UWASTE
Carl Stepp	EPRI
Gerry L Stirewalt	CNWRA
Tim Sullivan	DOE
Bert Swan	Geomatrix, San Francisco
David Tillson	Nevada
Ray Wallace	USGS/HQ

APPENDIX IV: FUTURE AGENDA

39th ACNW Committee Meeting January 15-17, 1992 (Tentative Schedule)

Systems Analysis Approach to Reviewing the Overall High-Level Waste Program (Open) - The Committee will continue deliberations to investigate the feasibility of a systems analysis approach to review the overall high-level waste programs, including the short and mid-range technical milestones for handling high-level waste, with the goal of reporting back to the Commission our recommendations as to the scope of the review and the advisability of undertaking it.

Revision to NUREG-1200 (Open) - The Committee will review and comment on a proposed revision to NUREG-1200, Standard Review Plan for a Low-Level Waste Facility.

Staff Technical Position on the Identification of Fault Displacement and Seismic Hazards at a Geologic Repository (Open) - The Committee will complete its review and comment on the draft Staff Technical Position on the "Identification of Fault Displacement and Seismic Hazards at a Geologic Repository."

Presentation at the Low-Level Waste Forum Winter Meeting (Open) - The Committee will discuss a paper being prepared for presentation at the Low-Level Waste Forum Winter Meeting. The paper will be based on reports recently issued by the ACNW on various low-level radioactive waste topics

Committee Activities (Open/Closed) - 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.

Working Group Meetings

Systems Analysis Approach to Reviewing the Overall High-Level Waste Program, February 19, 1992, 7920 Norfolk Avenue, Bethesda, MD (Larson) - The Working Group will continue to discuss the feasibility of a systems analysis approach to reviewing the overall high-level waste program, including the short- and mid-range technical milestones for handling high-level waste.

The Impact of Long-Term Climate Change in the Area of the Southern Basin and Range, March 11, 1992, 7920 Norfolk Avenue, Bethesda, MD (Gnugnoli) - The Working Group will discuss the historical evidence and the potential for climate changes in the southern

Basin and Range and their associated impacts on performance for the proposed high-level radioactive waste repository at Yucca Mountain.

Residual Contamination Clean-up Criteria, (Date to be determined), 7920 Norfolk Avenue, Bethesda, MD (Gnugnoli) - The Working Group will review the guidelines for radionuclide contamination limits for unrestricted use of sites and facilities that are or have been under NRC license, or were at one time under AEC license. This effort will be coordinated with a proposed effort by the ACRS to incorporate a land contamination limit into the nuclear power plant safety goals.

Methods for Assessing the Presence of Natural Resources at the Proposed HLW Repository Site, (Date to be determined), 7920 Norfolk Avenue, Bethesda, MD (Larson) - The Working Group will discuss methodologies for the assessment of the potential for natural resources at the proposed high-level waste repository site at Yucca Mountain. The relationship between natural resources and the potential for human intrusion will be emphasized.

APPENDIX V
LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE

A. Meeting Handouts

AGENDA ITEM NO.	DOCUMENTS
1	Chairman's Report
	1. Items of Possible Interest to ACNW Members and Staff, dated December 15, 1991, by Dade W. Moeller [Official Use Only]
2	Staff Technical Position on Investigations to Identify Fault Displacement and Seismic Hazards at a Geologic Repository
	2. Staff Technical Position on Investigations to Identify Fault Displacement and Seismic Hazards at a Geologic Repository, undated [Viewgraphs]
	3. Consideration of Fault Displacement in Repository Design and Performance, undated [Viewgraph]
	4. DHLWM Program Activities Shown in Relationship to 10 CFR Part 60 (FY91-92), page 13 [Viewgraph]
3	Systems Analysis Approach to the Storage of High-Level Waste
	5. Letter to Dade Moeller from Martin Steindler, dated December 15, 1991, re SRM, Letters, Memoranda, etc. (Official Use Only)
	6. Memorandum to Dade Moeller from Martin Steindler, dated December 15, 1991, re Comments on November Items of Possible Interest
	7. Nuclear Waste: Is There A Need For Federal Interim Storage Report of the Monitored Retrievable Storage Review Commission, November 1, 1989
7	Meeting with the NRC Commissioners
	7a. ACNW Reports/Issues for Discussion, dated December 19, 1991, with enclosures [Handouts]
10	Anticipated ACNW Activities
	8. Memorandum to ACNW Members from Mabel Lee, dated December 18, 1991, with enclosures
	9. Memoranda to Richard Major from Dade Moeller regarding future activities
	a. Memorandum to Richard Major from Dade Moeller, dated December 5, 1991, regarding Update on Uranium Mill Tailings
	b. Memorandum to Richard Major from Dade Moeller, dated December 5, 1991, regarding Contamination Standards
	c. Transmittal Note to Richard Major from Dade Moeller, dated December 5, 1991, regarding

Preliminary Draft Response to Robert Bernero Regarding Additional NMSS Consideration for Expert Elicitation Guidance Official Use Only)

11 Miscellaneous

10. Memorandum to ACNW Members from Raymond Fraley, dated December 13, 1991, regarding Proposed Amendment to FACA, with enclosure

B. Meeting Notebook Contents Listed by Tab Numbers

TAB Contents

1 Chairman's Report

1. Introductory Statement by ACNW Chairman, 38th Meeting, dated December 18-19, 1991
2. Items of Interest

2 Working Group On Comments On Final Draft Staff Technical Position On "The Identification of Fault Displacement And Seismic Hazards At A Geologic Repository"

3. Schedule and Outline for Discussion ACNW Working Group Meeting Related to Seismic and Faulting Investigations for a Geologic Repository, dated December 17, 1991
4. Status Report
5. Memorandum for Ray Fraley from Youngblood, dated, November 22, 1991, re Final Draft Staff Technical Position on "The Identification of Fault Displacement and Seismic Hazards at a Geologic Repository"

3 System Analyses Approach To The Storage of Spent Fuel (High-Level Waste)

6. Status Report
7. Memorandum for Dade Moeller from Chilk, dated August 21, 1991, re Staff Requirements, M910725A
8. Memorandum for Chairman Selin from Dade Moeller, dated December 2, 1991, re Staff Requirements Memo., M910725A
9. Summary of meeting on systems analysis project assigned to the ACNW by Chairman Selin. (Prepared for Internal Committee Use Only)
10. Memorandum for Susan Bilhorn from Richard Major, dated October 30, 1991, re Dr. Moeller's Summary of Meetings with Commissioners Rogers and Remick (Prepared for Internal Committee Use Only)

11. Memorandum for ACNW from Dr. Steindler, dated November 21, 1991, re "Integrated Systems Analyses of Waste Disposal
12. "DOE Position on the MRS Facility Presented to MRS Review Commission," excerpted from OCRWM Bulletin, May/June 1989
13. MRS-related articles, excerpted from OCRWM Bulletin, September/October 1991

4 Prepare Next ACNW Program Plan for the Commission

14. Program Plan for ACNW. (Prepared for Internal Committee Use)

5.1 NRC Staff Capabilities in Performance Assessment and Computer Modeling for High-Level and Low-Level Waste Disposal

15. Background
16. Memorandum for Dade Moeller from Kenneth Rogers, dated April 29, 1991, re General Questions Not Addressed At The ACNW Meeting With The Commission On March 22, 1991
17. Memorandum for Commissioner Rogers from Dade Moeller, dated December 2, 1991, re NRC Capabilities In Computer Modeling And Performance Assessment Of Low-Level Waste Disposal Facilities
18. Memorandum for Commissioners Rogers from Dade Moeller, dated December 2, 1991, re NRC Capabilities In Performance Assessment And Computer Modeling of High-Level Waste Disposal
19. Memorandum for Commissioner Rogers from Ray Fraley, dated November 2, 1991, re Reports of Invited Experts Following The October 16-17, 1991 Working Group Meeting Of The ACNW, with enclosures
20. Memorandum for Carol Peabody/Janet Kotra, from Giorgio Gnugnoli dated November 8, 1991, re Dr. Moeller's Summary of Meetings With Commissioners Rogers and Remick, (Prepared for Internal Committee Use)
21. Memorandum for Susan Bilhorn/Regis Boyle, from Richard Major dated October 30, 1991, re Dr. Moeller's Summary of Meetings With Commissioners Rogers and Remick, (Prepared for Internal Committee Use)
22. Summary of Meetings with Commissioners Remick and Rogers, dated October 30, 1991, (Draft #3)

5.2 Status Report on Systems Analysis Approach to the Transportation, Interim Storage, and Final Disposal of High-Level Waste

23. Background
24. Memorandum for Dade Moeller from Samuel Chilk,

dated August 21, 1991, re Staff Requirements M910725A

25. Letter, for Chairman Selin from Dade Moeller, dated December 2, 1991, re Staff Requirements M910725A

5.3 Working Group on Geologic Dating of Quaternary Volcanic Features and Materials

26. Background
27. Schedule and Outline for Discussion
28. Letter for Chairman Selin from Dade Moeller, dated 12/10/91, re Geologic Dating of Quaternary Volcanic Features and Materials, Draft #1 (Prepared for Internal Committee Use)

10 Anticipated ACNW Activities

29. 39th ACNW Meeting January 16-17, 1992
30. 40th ACNW Meeting February 20-21, 1992
31. 41st ACNW Meeting March 12-13, 1992
32. 42nd ACNW Meeting April 23-24, 1992
33. Other Topics
34. Working Group Meetings
35. Blaha List
36. Consultants Recruitment
37. Memo for Mike MacWilliams from Giorgio Gnugnoli, dated November 6, 1991, re Discussion of Available Contracting Mechanisms for Technical Support for Advisory Committee Meetings
38. Staff Engineers' and Staff Scientists' Research Projects
39. Tentative Agenda for 44th Meeting June 25-29, 1992, Richland/Hanford, Washington
40. Memorandum for Rich Major from Dade Moeller, dated December 1, 1991, re Two Items, (Prepared for Internal Committee Use)
41. Memorandum for Paul Pomeroy from Giorgio Gnugnoli, dated November 20, 1991, re NMSS Response to ACNW Report on Expert Judgement, (Prepared for Internal Committee Use)
42. Memorandum for Ray Fraley from Robert Bernero, dated October 21, 1991, re Use of Formal Elicitation of Expert Judgement in the High-Level Waste Repository Performance Assessment Program
43. Memorandum for Robert Bernero from Dade Moeller, dated July 31, 1991, re The Role of Formal Elicitation of Expert Judgement in the Performance Assessment of a Geologic High-Level Waste Repository
44. Memorandum for Richard Major from Dade Moeller, dated December 1, 1991, re Mishaps Leading to

Contamination (Prepared for Internal Committee Use)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Title: PERIODIC BRIEFING WITH ADVISORY COMMITTEE ON NUCLEAR WASTE

Location: ROCKVILLE, MARYLAND

Date: DECEMBER 19, 1991

Pages: 71 PAGES

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This is an unofficial transcript of a meeting of the United States Nuclear Regulatory Commission held on December 19, 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.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

- - - -

PERIODIC MEETING WITH ADVISORY COMMITTEE
ON NUCLEAR WASTE

- - - -

PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Thursday, December 19, 1991

The Commission met in open session, pursuant to notice, at 10:00 a.m., Ivan Selin, Chairman, presiding.

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission
KENNETH C. ROGERS, Commissioner
FORREST J. REMICK, Commissioner
E. GAIL DE PLANQUE, Commissioner

STAFF SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

DR. DADE W. MOELLER, Chairman, ACNW

DR. MARTIN J. STEINDLER, ACNW

DR. WILLIAM J. HINZE, ACNW

DR. PAUL W. POMEROY, ACNW

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

10:00 a.m.

CHAIRMAN SELIN: Commissioner Curtiss is suffering from what I understand is called the American flu, a rather misdirected touch of chauvinism as far as I'm concerned.

We'd like to welcome you again this morning. The Commission is pleased to have the members of the Advisory Committee on Nuclear Waste here to brief us on your work of the last few months and be particularly interested in your thinking on this broad systems analysis approach for looking to see if there are things that have fallen between the cracks and the overall approach to high-level waste program.

We have a great deal of interest in your views both on the high-level and the low-level waste disposal issues that will come before the Commission. We must be sure that the requisite staff capabilities are in place in this area to conduct independent views of license applications when they're received and we look forward to hearing your discussion of your Committee's plans for the next several months.

I don't think I have anything much more specific to say.

Commissioner Rogers?

COMMISSIONER ROGERS: Just during the course of your -- or before we've finished, I wonder if you would be able to comment, and I'm just telling you now so you can think about it a little bit, about the EPRI workshop in September on the EPA high-level waste standards. If you have any comments about that, I'd like to hear them. Also, I understand that some of you attended the conference by the Society for Risk Analysis a week or so ago in Baltimore. If you have some comments there as to anything that would be interesting for us to hear about, I'd like to hear about those at our meeting.

Thank you.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: I have nothing.

CHAIRMAN SELIN: Doctor Moeller, the floor is yours.

DOCTOR MOELLER: Well, thank you, Mr. Chairman. We did indeed have people attend both of those meetings and we'll simply ask them to respond.

This morning, the schedule that we've proposed is simply to review the effort that we undertook to assess the computer modeling and performance assessment capabilities of the staff in

the high-level and the low-level waste area. I'll cover low-level waste first and then Paul Pomeroy will cover high-level waste and then we'll immediately get into the systems analysis that you, Mr. Chairman, commented on. Martin Steindler will cover that and then we'll address your questions and if there's time remaining, we do have a preliminary report on our working group meeting on methods for dating geologic structures and so forth and we'll be willing to comment on those.

Before I comment on the performance assessment review and computer modeling capabilities, I'd like to share with you some general observations that we made. These are quite obvious but I find it interesting to write them down and see these general observations. First of all, in your Office of Nuclear Regulatory Research, high-level waste and low-level waste are addressed by a common team. It's all integrated.

Within NMSS, of course you have a division of high-level waste and a division of low-level waste and there is a separation and therefore less interaction between the two groups. We find that within the division of high-level waste that most of the performance assessment and computer modeling

capabilities are in-house. In other words, they've developed them themselves. They are working with the Center for Nuclear Waste Regulatory Analyses to develop performance assessment capabilities there, but they're in their infancy. So, I think it's important to realize that their capabilities then are in-house.

If you compare that to low-level waste, they are developing in-house capabilities and indeed they have a certain degree of such capabilities, but they depend heavily upon Sandia National Laboratories for their support in this area.

Now, the states are also, of course, involved, the agreement states, in reviewing performance assessments that are done by various applicants and I think it's interesting there to realize that most of the capabilities that the states depend upon are provided by a contractor. They're not in-house within the states. We were commenting in reviewing and preparing for this meeting that it would have been interesting if we had had the time, and maybe we still should do it, to explore with some of these contractors just what are these capabilities and what do we think of them.

Another general observation is that the low-level waste disposal facilities, many of them are

in advanced stages of development, whereas the high-level waste repository, of course, is still some time away. The last observation I would make is that in terms of the high-level waste licensing function, performance assessment, et cetera, that's exclusively an NRC responsibility, whereas when you get over to the low-level waste area your agreement states, in fact the majority of the facilities currently underway are in agreement states. So, in terms of that and the NRC serves primarily as a consultant to provide guidance to the states.

Another observation I would make before I summarize the low-level waste conclusions or comments is that the results that our letter to you, of course, represents only a small part of the real effort that took place and, I think, of the benefits of that effort. For example, we had a two day working group meeting. We had many outside groups in addition to the NRC there and we had in addition six invited experts. These invited experts were, I'm convinced, the really top flight people, very knowledgeable in computer modeling and performance assessment. Not only did we benefit by the questions they asked and the insights that they provided, but at the end of the meeting each of them provided us a written summary of

their observations and we have shared those written summaries with you and with the staff. So, we believe that was very beneficial.

Now, in terms of the low-level waste program, one of our major recommendations, initial recommendations, was that there's a need for the staff to develop what we would call the strategy document to lay out the goals of their computer modeling and performance assessment effort. We think that report or document should tell what types of data they believe are needed as inputs, how they're going to collect these data, what equipment, both hardware and software they need to meet their own licensing responsibilities and what types of people they believe are needed. This document should also describe how the staff plans to evaluate the performance assessment efforts of these contractors, of these applicants and so forth and how or -- they should provide, we believe, very specific guidance to the agreement states on what your staff believes they should do in the way of a review of the performance assessments associated with various applications that they're processing.

Then, as the performance assessment capability of our staff matures in the low-level waste

field, we believe that the conduct of these performance assessments will provide insights, guidance as to the research needs, what research is needed because it tells you what the voids are and where you need additional data. Now, the staff told us that indeed that is taking place today, that to a certain degree performance assessment is guiding their research, but we weren't that convinced. We believe that there's a long way to go in this area.

Then we also believe that because of the insights that are provided by performance assessment that every member of the low-level waste staff ought to be familiar with the methodology just so they'd have an appreciation and if they're thinking about a particular problem they won't forget that maybe over in the performance assessment group they could get some advice and guidance. So, we made that recommendation.

We also made the recommendation that the staff start incorporating more probabilistic analyses into their performance assessment work. They're using a lot of deterministic analyses now which have associated uncertainties and we believe by applying probabilistic techniques that they could quantify those uncertainties. And particularly they are moving

now into what's called a phase 2 program and we believe that's the time to really get going with this. The probabilistic techniques are particularly important due to the fact that a number of the states that are developing or regional compacts that are developing facilities are beginning to say, "Maybe we need a facility or maybe we need to assess its performance out to a time frame as much as 10,000 years." Well, if you're going to get into that time frame, there's no other way to do it.

Then we also believe that a key input into any performance assessment is the source term. We really still don't know enough about the source term for low-level waste. For example, we were thinking, "Well, what question would Chairman Selin ask us," and we wanted to rehearse and be ready. Someone said, "Well, he could say, 'Do you as a committee believe that you need to project out the performance of a low-level waste facility for 10,000, yes or no?'" Well, unless you know the source term, you can't answer that. If the source term is strontium and cesium, there's no need for that. Five hundred years is plenty. But if it's plutonium or something else, there is a need.

Then we last realized that the --

CHAIRMAN SELIN: The next meeting, Doctor Moeller, I'd be appreciative if you'd give me a list of the questions I might ask so I wouldn't disappoint you.

DOCTOR MOELLER: Lastly we suggest that they keep up with what's going on in the other countries because France, for example, says they've done performance assessments of above ground bunkered facilities. Well, let's find out what they did. What are their methods? Then the --

CHAIRMAN SELIN: Before you get off that, is that a reinforcing comment, we should continue to keep up --

DOCTOR MOELLER: Yes.

CHAIRMAN SELIN: Do you think we'd make a reasonable attempt to try to keep up and so forth?

DOCTOR MOELLER: Yes. Yes, you are. The staff is making a reasonable attempt and we certainly endorse it.

Then, in terms of specific things on computer modeling capabilities, and I'll wrap it right up, we believe the hardware of the low-level waste program is inadequate. Fortunately, you can correct this for a few tens of thousands of dollars. We're not talking major funding here. They also need to

establish better ties to the data links with international and national groups. The modeling capabilities that they need are diverse. They're looking at above ground, below ground, wet climate, dry climate, all of those types of things. They need to be ready for that.

Then, a final recommendation or the last one I want to mention is that the low-level waste staff responsible for performance assessment should be clearly identified and that ought to be their major responsibility.

CHAIRMAN SELIN: Thank you. One question I would like to ask. Are you aware of other relevant research in these low-level waste areas you've talked about that have been sponsored by other parts of the federal government or is basically the NRC it when it comes to the models that are relevant to --

DOCTOR MOELLER: We gained a lot of insight in terms of what DOE is doing. Now, where the contractors obtain their guidance or how those developments took place, I don't know. We need to explore that.

CHAIRMAN SELIN: Insofar as you have found work done by DOE or EPA, does it appear to you that we take that work into account when we plan our own

work or is it --

DOCTOR MOELLER: Yes, sir. I feel your staff is fully aware of what's going on.

COMMISSIONER REMICK: Somewhere I thought you had suggested there be closer ties between the DOE effort in the low-level waste area and our staff.

DOCTOR MOELLER: Yes.

COMMISSIONER REMICK: I was going to ask you what you meant there.

DOCTOR MOELLER: Okay. What we meant there was that the DOE -- you know, the states have many problems and many challenges and many a time we'll ask, "Why doesn't the NRC staff get busy on this?" and they will say, "Well, that's DOE's responsibility," and DOE indeed has a responsibility to provide technical guidance to the states in low-level waste disposal and they've done that in several ways by developing performance assessment capabilities and doing assessments of the various types of low-level facilities. I'm sure Doctor de Planque could tell us a lot more about it.

But indeed, what we said was that the NRC staff ought to factor into that DOE program, if it's possible, their needs. So, while DOE is running this major assistance program to the states, it is meeting

the needs of the NRC as well as the states, as well as what DOE sees as their needs.

COMMISSIONER REMICK: Is that DOE assistance program still run out of Idaho? At one time I believe it was.

DOCTOR MOELLER: I don't know.

DOCTOR POMEROY: I don't know the answer to that either.

DOCTOR MOELLER: No, I don't know.

COMMISSIONER REMICK: Well, is your concern that we are duplicating what DOE is doing --

DOCTOR MOELLER: Not at all.

COMMISSIONER REMICK: -- or that DOE is not incorporating in the NRC --

DOCTOR MOELLER: That the NRC --

COMMISSIONER REMICK: -- needs or vice versa or what?

DOCTOR MOELLER: The NRC staff is not, in our opinion, taking full advantage of the DOE effort and they could gain a lot by taking more advantage of it.

COMMISSIONER ROGERS: It seems to me a note in your report that the NRC staff was having difficulty getting computer programs --

DOCTOR MOELLER: I believe that was in the

high-level waste area.

COMMISSIONER ROGERS: Only in the high-level, not in the low-level?

DOCTOR MOELLER: Yes, and Paul --

DOCTOR POMEROY: That's our perception.

COMMISSIONER ROGERS: That's really quite a different question.

DOCTOR MOELLER: We had rehearsed that question too. It's being done now on a case by case basis. We want a generic resolution to the problem. So, when NRC asks for a particular code, it will be provided properly.

COMMISSIONER ROGERS: It's a mechanism for --

DOCTOR MOELLER: The mechanism needs to be greased.

COMMISSIONER ROGERS: Contact point.

DOCTOR POMEROY: A formal mechanism and one which provides ready access by the NRC staff to the DOE's data and models being mindful of the fact that some of the DOE data and models have a relatively low QA and QC status. That needs to be taken into account if the staff uses those.

COMMISSIONER DE PLANQUE: Is this something you feel can be accomplished by initiative

at the staff level?

DOCTOR POMEROY: I don't believe so. My personal opinion is that I believe it should be carried out at a very high-level, in fact, so that there is no question in anybody's mind that when a request is made and I see that as a possibility of electronic request, that is electronic access to that data, that that data will be forthcoming.

DOCTOR HINZE: I would like to interject that this is going to become more important as the site characterization comes forth and we're going to see a lot of data and we have to know -- the staff has to know what data are available, what form, et cetera, so that full advantage can be taken of that.

COMMISSIONER ROGERS: You will come to the high-level waste letter later, but in both those you emphasize the need for greater staff consistency, I don't know if you use that word, but in knowledge of performance assessment methodologies. I just wondered what your view there is as to how well defined a discipline that is. We've recently been focusing on PRA and statistics and questions of that sort with respect to staff capabilities. There, it seems to me fairly clear that it's a pretty well defined discipline that we're talking about and should easily

be something that could be encapsulated in some kind of a specific program that everybody could be exposed to. But what about performance assessment, particularly in this area? Is there a -- is the methodology that well defined as a discipline that one could somehow or other bring everybody up to some minimal level of congruence or is it not? I just really don't know myself.

DOCTOR MOELLER: Why don't we switch to Paul and let him answer that and move on into the high-level waste area?

DOCTOR POMEROY: Right. To address that question, I would say that you're perfectly correct, that performance assessment is not at the same level of development, in my opinion, as probabilistic risk analysis. Nonetheless, I think there is an achievable consensus that exists in the community, since the community is relatively new and relatively small, that could be taken advantage of to facilitate the licensing process. I believe in another context we've recommended that the staff consider trying to achieve that consensus in the area of expert judgment. But that would apply.

We've also recommended that the methodology be looked at and that the staff try to

develop a consensus on the use of the methodology. So, I think it is possible to develop a partial consensus, partially because the methodology is not that well developed yet, is not completely developed. It's very well developed, but not completely.

I'd like then to turn to the high-level waste issues. We've looked at, as Dade said, the high-level waste capabilities and our general conclusion is that the high-level waste management staff is highly qualified and a professional group and is developing a suitable program for performance assessments of a high-level waste disposal facility. I'll use some terms here. This program should be sufficient to demonstrate to a licensing board whether or not a repository meets the requirements of 10 CFR 61.12 and 61.13. Although the program is adequate, we recognize that it cannot be totally independent due to the necessary reliance of the NRC staff on data models and computer codes from the Department of Energy and other sources.

CHAIRMAN SELIN: Could you just stop at this point?

DOCTOR POMEROY: Sure.

CHAIRMAN SELIN: Isn't there a verification and validation procedure such that we

could accept the codes and independently check them to the point that they could serve both the purposes of the licensee and of the licensing organization or is there some deeper conflict that would be involved?

DOCTOR POMEROY: No. I think that's perfectly possible. We have -- the staff has indeed the capability to do that independent evaluation and analysis and they certainly can do that.

Some additional points. The staff intends to conduct a selectively focused review of the performance assessments conducted by the DOE, supported by in-depth reviews in certain key areas. That approach is consistent with what NRC has done in reviewing other license applications in the past. We believe it's realistic and we think that it would produce a product that is both defensible and understandable in the licensing arena. We've stressed that it isn't truly independent because of the data, but the approach is acceptable as long -- as the Chairman has just pointed out, as long as the staff has the capability to independently evaluate the quality of the data.

The third point is that the staff indeed would benefit from some sort of an endorsement or affirmation by the Commission and the upper NRC

management of the exact role that you see for the NRC's performance assessment staff in the prelicensing and licensing process. There's also a need clearly to provide some additional funds to that core group as performance assessments move more to center stage as we get closer to the licensing arena.

COMMISSIONER ROGERS: You said it in a very nice quiet way, but that sounds to me like we don't even have the basis for what people are doing well defined because, after all, performance assessment is what it's all about when all is said and done. What is it that -- should the Commission be affirming? It sounds to me as if we haven't decided what the staff is supposed to be doing here in using performance assessment methodologies. What is it we should be affirming and supporting? I'm somewhat troubled by this because it sounds to me like it's a very nice way of saying that we really haven't gotten our act together here.

DOCTOR POMEROY: I don't want to imply that entirely, so let me answer the question obliquely. It seems to me that there are a number of possible roles that the performance assessment staff and performance assessment itself can play. You asked -- the reason I've stressed the independent question

here, you've asked us whether or not the staff has the capability of producing an independent performance assessment. That would be one role for the staff. That would imply a massive amount of resources, of course.

The other end of that spectrum, of a spectrum of possibilities, is that there is simply a review function. That is, bring me an application and we'll look at it and we'll review it given our overall expertise within the organization, but we won't develop any independent capability to look in detail in certain key areas. I think the NRC staff itself has carved out a reasonable niche there is the middle of that spectrum. But perhaps the Commission has a different view of the role of performance assessment and the staff in that spectrum and, if so, that certainly would be useful to the staff to understand.

Have I answered that?

COMMISSIONER ROGERS: Well, it's been very helpful, yes. Yes. I think I've got a little bit better --

COMMISSIONER REMICK: I assume this comes from communicating with the staff. Do they feel that they need some direction to tell them what their role should be, that it's not clear in their mind? Is that

what you're saying or is it saying that we haven't expressed our love for them, hubbub in there more than once a month?

CHAIRMAN SELIN: Asking the Commission for direction is like the Romans asking the Goths in to settle an internal dispute. It might make some sense on paper, but it doesn't happen very often.

DOCTOR POMEROY: I think that the staff-- my perception is that I think the staff itself has a clear picture of its role. As we've said, we think that's an appropriate role, but that's not our decision. I think it's not clear from our discussions with the staff that everybody in the management structure understands that role and/or concurs with it. I think that's what we were asking for here was simply either an affirmation of that role or a statement of what the role should be from the Commission and upper level management's perspective.

COMMISSIONER REMICK: Okay.

DOCTOR POMEROY: There are several specific comments we'd like to make. We have brought up the question of strategy document for a low-level waste and we've brought up a question of a strategy document in the past. We feel very strongly that there is a need for a strategy document in high-level

waste performance assessment area and that should include elements like what is that program designed to accomplished, how is the program to be carried out and what's the time table for that program. Clearly that strategy can't be developed without a clear perspective on what the role is from our previous discussion.

DOCTOR MOELLER: One comment would be that if such a document were developed and it was approved, then that would solve maybe the affirmation question.

DOCTOR POMEROY: We do think the staff needs to delve deeper into the various scientific and technical problems, especially questions of how we treat uncertainty and how we treat and use expert judgment. We've discussed the staff's difficulties with regard to obtaining data and we believe that that generic formal arrangement should be made, as you've suggested, at a very high level.

The NRC staff is expanding its performance assessment capability to provide estimates of the dose to individuals and population groups and to increase the effectiveness of this effort, the staff should expand its interactions with the international community to take full advantage of codes that have been developed to predict dose in other countries.

COMMISSIONER DE PLANQUE: Let me interrupt a minute. Did you see any particular obstacles to that happening or is this just a matter of encouraging more of that interaction?

DOCTOR POMEROY: I see no obstacles. I think it's simply a matter of encouragement. As I'll state later, I believe the high-level waste staff has done an excellent job in interaction in the international area. Its simply that in this area they haven't done that.

COMMISSIONER REMICK: In Part 61, it is an area where we do have a dose limit as a criteria. Are you by any chance aware do other countries use dose in the case of low-level waste or do they release this?

DOCTOR MOELLER: I'm not sure. From what I hear, they certainly have performance assessment capabilities to predict dose. So, there must be a reason for it.

COMMISSIONER REMICK: Typically I guess in the reactor area they don't like to go out to dose. They usually restrict it to releases or core damage. So, I was just curious in the waste area. I really don't know.

DOCTOR POMEROY: Doctor Moeller has cited

the advantages of performance assessment in developing research priorities and we think that in the high-level waste area there should be an effort made to formally incorporate the performance assessment results into prioritizing the research program in addition to the obvious benefits of the performance assessment in developing licensing capability.

COMMISSIONER ROGERS: Just on that, your statement was that all members of the NRC involved in high-level waste programs should be required to become familiar with the methodology of performance assessment. Is there a standard reference on this? Does a primer exist on this? If not, would it make some sense to encourage the development of one that could be used more generally in the community?

DOCTOR POMEROY: There are certainly books on risk analysis, but that's a different question.

COMMISSIONER ROGERS: I'm talking about here performance assessment specifically.

DOCTOR MOELLER: In low-level waste area, the staff, either through contract -- I'm not sure how it was done, but they have a self-teaching manual.

DOCTOR POMEROY: Right. In the high-level waste --

COMMISSIONER ROGERS: And do you feel that

that is --

DOCTOR MOELLER: And then they conduct courses on it and --

COMMISSIONER ROGERS: Do you feel that that's adequate? Do you feel that it's --

DOCTOR MOELLER: I think for what we're talking here for others to be familiar and so forth, that should be adequate, yes.

DOCTOR POMEROY: And you're familiar, of course, with the efforts of the high-level waste staff in setting up an education program, the one week long courses in performance assessment that are given periodically here and we believe those should be strongly encouraged. There's a question of how those -- to what group those particular one week courses or other courses, similar courses in high-level waste performance assessment should be focused, to what group.

We believe that the phase 2 performance assessments that the staff is currently undertaking provides the opportunity to explore one or two key difficult areas in great detail. We believe they should do that and we believe that the analyses should be chosen to illustrate the mechanisms for the identification and quantification of the uncertainty

and for the elicitation and use of expert judgment and we should continually gain a better understanding of the difficulties associated with determining compliance with the standards.

Finally, my favorite subject, of course, is expert judgment, as you know. The NRC high-level waste staff needs to consider the role of expert judgment in greater detail. Staff should develop the strategy for the use of expert judgments in performance assessment both in conducting their own analyses and in reviewing how DOE uses expert judgments in its assessments. That's a very timely issue at the moment.

I'd like to turn now to the computer modeling. Our words -- first let's look at the hardware situation. Our words are that the hardware is outdated and inadequate and that's being generous, I believe, compared to modern day computer capabilities. In addition, electronic links between computers here at Headquarters and other facilities, including the Center are almost non-existent. Having said that, one has to say that the staff has demonstrated great ingenuity in achieving the computer capability that they need. But, in fact, there is a pilot program that has been funded to upgrade the

computer capability of staff and we look forward to seeing the results of that, but we're convinced that continuing upgrades of that capability, computer capability are going to be needed.

COMMISSIONER ROGERS: Do you feel that the staff has actually felt that they really wanted hardware that they simply couldn't get because of financial constraints? In other words, that there just wasn't the funds available to get what they really want to use or whether somehow they've been comfortable with what they have and have not been really aggressively pursuing the use of more modern and sophisticated hardware.

I say that because this is an area that Commissioner Remick and I have been both very interested in for the last year or more and we have found that certainly there are some parts of the NRC where there is not a very great interest in using the most modern hardware. But we're more interested than the practitioners seem to be. I wonder what your analysis of the situation here is, whether people really would like to have more sophisticated hardware because they know what they want to do and can't do it because they don't have it or whether they don't see it as necessarily advancing their ability to solve

the kinds of problems they feel they have to solve.

DOCTOR POMEROY: Our perception is that the former is the correct situation, that the staff clearly perceives what it needs and can delineate that fairly carefully. My perception is that they're unable to achieve that because of resources, limitations up until the time that this pilot program set of funds were provided and we'd like to continue to examine how that program develops as it goes into the future because that involves first a study of the needs of the staff, which we think are fairly well delineated, but it first involves a study of the needs of the staff and the overall interconnection links and then purchase of hardware to satisfy the perceived needs of the staff.

DOCTOR HINZE: I guess I would like to add there that it's very important that we think about staffing into the future and the types of people that we add. The types of people that you want to attract are not going to come with the types of facilities that are in hand with hardware, peripherals, software. I think that looking to the future and performance assessment, a future role in this Commission, it's extremely important that upgrades be made and that people be encouraged to take advantage --

COMMISSIONER ROGERS: To question the work environment.

DOCTOR HINZE: That's right. My students aren't interested in going out to a place where they don't have a work station at a very minimum, to have access to -- and it really doesn't take a great deal of money, I think, to produce the kind of environment that we need for the quantification involved in performance assessment. I'm talking about the modeling procedures through the whole range.

DOCTOR POMEROY: Bill is perfectly right in that. It doesn't take vast amounts of money, but it does take resources. We believe strongly they should be provided to that group because that group has a defined role, self-defined role perhaps, that involves extensive computer capability and you simply can't do that kind of computation on a 286 computer. It's just not possible.

We think the staff has outstanding capabilities, as I've said, for developing and using conceptual, mathematical and computer models. The capabilities reside within the Agency and we think that that's an important factor in this area. We think the Center has had difficulty in recruiting the performance assessment expertise that it clearly

needs. That's a function of the lack of suitably trained performance assessment people and, of course, financial limitations on what the Center can offer itself.

But the performance assessment manager at the Center certainly has good modeling and performance assessment capabilities. There's no question about that.

Again, we've talked about the training and we think that's being implemented. We think those programs are extremely useful. We think the staff should, in its entirety, be ultimately exposed to those, including upper level management and we hope that you and the upper level management itself will encourage the continuation of those training programs.

I have a few summary ideas, but I think I'd just like to summarize what I perceive the needs are. That is for this strategy document, for an upgrade of the hardware, we have to resolve this limitation that the staff runs into of obtaining primarily software, but data and models from the DOE. And I have to stop with the question of resources again, that the adequate resources to meet the needs of the program as it evolves have to be provided, it would seem to us.

Subject to your concurrence, we'd like to continue to look at these issues. They're extremely interesting not only to me personally but to the Committee as a whole. Thank you.

COMMISSIONER ROGERS: I just wanted to say that I thought the two letters were absolutely superb. It seemed to me that they were very thoughtful and the way you went at answering the questions was really first rate. I think there's an enormous amount of food for thought here in these letters for all of us to pay attention to. I just really wanted to compliment you on them because I think you did an excellent job myself. I raised the questions and I was just delighted with the answers that came back. So, I wanted to say that because I think it's true.

I had a couple of questions about some points here. What do you think -- you pointed out that EPA is revising its standards for disposal of low-level waste and you also pointed out that we are producing or reviewing documents, NUREG-1200 and 1300 you referred to, and that you thought it was very important to get those and the guides out to the people in the field that need to have that guidance. But what do you think would be the -- what's your estimate of the impact of the new EPA standards? I

know they're not out, but on those documents, do you think that they would have a very strong impact that would cause yet a further revision or not?

DOCTOR MOELLER: Our understanding -- well, to comment, the NUREG-1200 and so forth does have a section on performance assessment. So, we think it's important to get it out. You're developing a regulatory guide on performance assessment for low-level facilities. It's critical that that be gotten out just as soon as possible because it's needed. In terms of EPA, we don't know much more than you in terms of what they have in mind. However, back to, I guess, Commissioner Remick's question, it's my understanding that the EPA standards will specify dose limits for the population. Well, if indeed that's true, that ties into some of the things we say.

DOCTOR POMEROY: On the other hand, we're not sure of what the EPA schedule is, obviously.

COMMISSIONER ROGERS: Yes.

DOCTOR POMEROY: And there is a timeliness issue here. While it's not perfect to issue some documents and then have to go back and revise because of the time issue, it seems appropriate to move forward with the documents and not necessarily wait for the EPA results.

DOCTOR MOELLER: Oh, absolutely. We wouldn't say hold up at all.

COMMISSIONER ROGERS: Sure. I found these submissions from the invited experts very interesting. And I noted that there were a couple of points in some of them that you didn't put in your report and I just wanted to explore them. There was considerable concern about lack of geochemical theory and analysis in the source term modeling for low-level waste. One of the experts made that comment and said, "The absence of such information in the presentation indicates to me that the primacy of geochemical modeling in source term PA may be severely under appreciated by the NRC." Do you share that concern?

DOCTOR HINZE: Well, I think that our feeling on that was that the experts did not hear the complete story. They heard a presentation and they didn't get the complete story, and that the NRC staff is concerned about these items and that this was just a geochemical expert looking for his particular specialty. That's the way I'd field that comment.

COMMISSIONER ROGERS: And you more or less all feel that way?

DOCTOR POMEROY: I think, though, both in high-level waste and low-level waste there has been

a relative lack of emphasis on geochemistry and I believe that's partially a matter of what we have available immediately to us and I believe the other areas, as Bill says, will be investigated, but it's a matter of time.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: From the 4th floor of Phillips Building, we quite often get reminders about coherence and consistency and many times I agree with it, but I like to pull the chain of your colleagues from time to time and remind them when I see what I consider to be inconsistencies or incoherence in their recommendations.

I think, Doctor Pomeroy, you have answered it, but I found it of interest and it did confuse me at the time. On page 3, you talk about the need for staff to receive training in performance assessment, but then on page 4 you indicate that training is underway, that you're pleased to see that it's implemented. I guess what you're saying is there are training programs underway, but they are not completed. Is that it? But I found it curious. One place you're recommending that it be done. Another place you're saying that it was being done.

DOCTOR POMEROY: I could provide you my

list of questions too. I don't believe there's an inconsistency there. We've had a few of these one-week training programs in performance assessment where the performance assessment groups are reaching out to the other members of the high-level waste staff. We feel that the training program as it's being implemented is adequate, but it certainly has not reached anything like every member of the staff that it should.

COMMISSIONER REMICK: Okay. And you had a comment about the Center also that I got the feeling that perhaps they were not pursuing training of personnel there in performance assessment?

DOCTOR POMEROY: I don't get the feeling that they're pursuing a formal training course in performance assessment. As you know, in many academic institutions people get together every week and discuss the problems and that's much more the mode in which the Center operates, and so there is an interchange and informal training program at the Center and we believe that that probably works fairly well, although we did not investigate that in detail.

COMMISSIONER REMICK: Okay. So you do not necessarily see a problem there?

DOCTOR POMEROY: At the Center, no, we do

not.

COMMISSIONER REMICK: Okay.

COMMISSIONER DE PLANQUE: I am sorry I don't have as much background on this as I would like at this point, so maybe the answer is covered elsewhere but I'll use the opportunity to ask it anyway. On the first page of your letter regarding the high-level waste facilities, you indicate that you recognize that the assessments cannot be totally independent because of the reliance on other organizations for codes and data. In the term "organization" there, are you referring primarily to DOE or contractors? What was behind that?

DOCTOR POMEROY: We're referring primarily to the Department of Energy and its contractors.

COMMISSIONER DE PLANQUE: And it's contractors.

DOCTOR POMEROY: There are clearly other players in the program that have data, particularly a DOE contractor, the U.S. Geological Survey, and we certainly want to see the staff have the capability of accessing that data from all of those organizations. What we had primarily in mind was the DOE and its contractors.

COMMISSIONER DE PLANQUE: Is this an area

where you would hope that more international participation might provide greater independence?

DOCTOR POMEROY: I don't see --

COMMISSIONER DE PLANQUE: In terms of the types of codes or methods used?

DOCTOR POMEROY: My personal estimation of the level of interaction at the international level for the high-level waste group is that that's extremely good from the standpoint of interaction. I believe that if there were programs or useful models out there the staff would be aware of them in a very short period of time, so I'm not convinced that greater interaction is needed in that area. Certainly in the area of estimation of dose there is a different question and perhaps you know more about that than I do.

DOCTOR MOELLER: But I think the answer is yes, that that certainly does provide independence.

DOCTOR STEINDLER: I may however comment that the applicant is looking at the same set of codes.

DOCTOR MOELLER: Yes, right.

COMMISSIONER DE PLANQUE: Yes.

DOCTOR STEINDLER: So, you lose some of that independence then.

COMMISSIONER DE PLANQUE: Right.

DOCTOR MOELLER: Well, sir, we're ready the to move to Doctor Steindler to cover your subject.

CHAIRMAN SELIN: Thank you.

DOCTOR STEINDLER: Let me start out by making a comment about the geochemistry question that you asked. I think there is -- my view is that there is a significant difference in the quality and certainly the quantity of geochemical input into performance assessment comparison, high-level waste with low-level waste. I would say in that sense that the low-level folks are not as nearly involved in looking at geochemistry as have been even to date the high-level people, who for reasons of their own have to have a much better grasp of what's going on in the geochemistry area. That's a side comment.

My presentation is in contrast to the other two, something that we have been told explicitly is not a good idea, namely to provide the Commission with a progress report. Nonetheless, with some trepidation then I start down this path and bring you a progress report.

Last July, Chairman Selin voiced the need for a systems analysis of the high-level waste activity or high-level waste enterprise, expressing

I think at least implicitly what some of us have felt for some time and that is the concern that things are not moving adequately or, if they are moving adequately, it wasn't clear that they are.

In August, an SRM came to us indicating roughly what we should be doing and set a deadline for November to have a rough outline of how this process were to be accomplished and whether or not this is a worthwhile exercise. We've looked at this issue at length since that time and wrote you a letter in December saying that we can't possibly do it by November. I'm here to tell you that we're not going to do it by November, so we've anticipated at least one question.

It is of interest that a fairly straightforward and simple question produced a reasonable amount of ups and downs for us, trying to interpret not only what was meant but how does one get this job started. The job, make no mistake about it, is not to do the analysis but to outline in a sense the scope of work that someone would need to get an idea of what needs to be done.

So we have finally, I think, settled on an approach that makes to us a reasonable amount of sense, or at least it did for me before I walked into

the meeting today. The reason I say that is because we've just heard about some of the inadequacies of performance assessment and the problems that that topic brings you, and I'm going to anticipate what I'm going to tell you. I'm going to use the process of performance assessment as essentially the story line of the systems analysis. And I do that, however, recognizing that there is a difference between the performance assessment subject to detailed critique and the methodology of performance assessment, which is what I want to use as the underlying framework for this systems analysis.

Let me set a little bit more background. I think the scope of the systems analysis that we see as being required and useful in this exercise is the complete disposal of high-level waste. This includes the transportation issues. This includes the repository. It includes not only spent fuel. It includes all the other forms of high-level waste, specifically glass and whatever ceramics that the Department of Energy might be producing in the not to distant future.

The function of such a systems analysis would be to do several things and they have been indicated in various documents, but certainly they

include identify what research needs the NRC needs to at least initiate if not already have underway. It identifies -- and these are not in order -- it identifies a critical path and the steps in the critical path that are required between the time you generate high-level waste and the time you're able to dispose of it. Equally important, it identifies a schedule as needed and a schedule as anticipated being carried out. The difference between those two is getting larger, some of us view, as time goes on. And finally, this process should identify the holes where are areas that are legitimately to be covered before you can accomplish disposal but are not yet being covered that are deemed to be sufficiently important so you can't ignore them. That's the nature of the product.

Our task here is to identify what does this animal look like, what's the shell of this animal, and then pose to the Commission are we in the right ball park, do we have the rough order of magnitude of what people are interested in. Let me say we cannot do this without doing what everybody is not doing and that is accepting Yucca Mountain as the repository. It's tough to do a systems analysis in a generic sense, so we've focused in on at least the

notion that we're going to address issues that relate to Yucca Mountain.

Let me back up, then, and tell you a little bit about the machinations of how we got to what I'm about to tell you. This is, as you all know, a multi-dimensional issue. It is multi-dimensional, not because it involves technology, the regulations, and that fuzzy area of politics, policy legislation, principles, et cetera, but it also is multi-dimensional because there are at least five or six important actors in it and in the technology area alone there are some 30 plus identifiable disciplines that have to be coordinated in some fashion or another. All of this simply points out the reason for the question, how do you do a systems analysis or should one be done.

In order to focus in on it, we picked up on something Commissioner Rogers pointed out, namely the initial story line -- if that's the right term. Let me use it. It's not a very good term -- ought to be constructed in the absence of regulatory and legislative issues. In other words, the focus of the systems analysis is technical. If that is -- that clearly can't be done in the total absence of the regulatory frame, but the regulatory frame is only a

background which identifies roughly where you're going. The issues tend to be easier handled if we worry about the thing on the technical basis alone.

There are really two substantive technical areas, geology and the waste package or the engineered barrier, however you want to call it. So, those are the two main technology areas that we need to consider.

Now then, what does the systems analysis look like, if I can describe this elephant in some fashion or another? It has a number of parts. Let me simply walk down some of the parts and tell you how one would address them. It gives you an idea of the scope and the possible utility of the answers that you would get out of it.

The first thing one needs to do clearly is to address the issue of site qualification. In the systems analysis on site qualification, the issue is what is the process and once having identified roughly what the process is, what are the information needs for each of the steps in this process? The information needs come under the heading, what is it, how can it be obtained, are the information needs obtainable? That's not always obvious that you can avoid the Heisenberg principle that the closer you

look the more you screw it up.

Who is doing the issue? Well, I think this is a current problem in the high-level waste domain as the DOE --

CHAIRMAN SELIN: Well, it's certainly true that the closer you look, the more it's screwed up.

DOCTOR STEINDLER: Right. I didn't want to carry that too far. A portion of the information needs are who is doing it. That is, who is getting the data, who is making the models, is there somebody? Then finally, I think it's necessary to ask the question how fast is this being done and how well is it being done? The how fast allows you the comparison to externally driven schedules like the utility generating fuel, the pile-up of glass or whatever that has to be taken care of, DOE contracts for waste acceptance and so on.

Now, if you do this for the site qualification process and then, having qualified the site you then ask the question, can you apply this to the performance assessment procedure or performance assessment process, I think you don't need to be a superb expert and have all the Is dotted and Ts crossed, as we were talking about in Paul's presentation, in order to be able to run down this

process and identify sufficient aspects of it so that you can get a picture of what is necessary and where are the holes.

In order to prioritize the things that are important and identify the holes that are truly important in comparison to those that simply exist that are not particularly useful, somebody needs to do, and that has been done to some extent, a sensitivity analysis of the performance assessment process. That tends to be done on a model by model basis the way things are currently structured in high-level waste. That's not too bad because they tend to be additive, but somebody needs to look at the picture as to whether or not that's true.

By the time you're done with that, you have covered, I think, most of the technical aspects of the systems analysis. Now you need to come back and bring in the role -- and so far we've focused largely on NRC and DOE as the principal actors in this process. Now one needs to introduce the input and limitations set by other organizations specifically, EPA, the Department of Transportation for transportation purposes, the states, whatever the Department of Defense wants to contribute to this from their naval fields, et cetera.

These folks provide criteria, they provide standards, they provide an approval or disapproval process which impinge on aspects of the systems analysis. Generally the quality of the information is governed to some extent by what the regulations are from external to NRC and DOE, as well as the scheduling, as we have uncovered, can be significantly impacted by requirements of approval, disapproval, assessments, et cetera, that are required.

I've not so far talked about the front end which can be added in an additive fashion, obviously. The transportation issues dealing largely with cask design, cask availability, scheduling and who is doing what in that area. That's not necessarily freestanding, but it has been addressed by people. The transportation logistics, for example, have been subject to a significant number of reports that people have worried about whether or not it's even doable once we get the thing started.

All right. Let me set this aside and then talk about at least a couple other things. One is it is probably worthwhile, especially as we relate to the issue of who does what and how fast, to address the question of alternatives and specifically the MRS comes in. Fortunately, the MRS Commission has done

a reasonably decent job in the systems analysis and their report could serve as a very good start as an input to this whole exercise. One needs to integrate that report into the rest of it. But much of that has already been looked at fairly hard.

There, clearly, the issue of what do you need, in other words how fast do you need it, who's looking at siting, what is the impact of the linkage that now exists between the MRS and the repository, those things all have to be factored in.

By the time you've accumulated this much information, you're now able to, I think, summarize into an analysis. The analysis should -- I think I've mentioned all the aspects that will allow you to do this. The analysis should be able to identify the holes in the system. They should allow you to prioritize. That is, tell you what's important, what isn't, give you an idea of the difference between schedules real and schedules perceived and generally, I think, address most of the concerns that I thought we understood from the Chairman's initial request.

Let me simply then close up with a couple of comments. One, this process that we have described is reasonably ambitious. Bits and pieces of it exist. The literature is I would say replete, but extensive

and one needs to pull that together. But it is still a significant issue. We have not yet come to the conclusion as to whether or not this is worthwhile. We will get that for you in as studied a fashion as we can.

But, recognizing that this is ambitious, one needs to at least address the question of cost. We have also, other than having two guesses on the table and since two points can either make a straight line or a circle, we'd rather not tell you, we've got two guesses on what the effort level we think might be involved in this thing.

That's the outline of the systems analysis as we currently see it. What are we doing? We've had conversations with Commissioner Rogers and Remick and the Chairman. We've yesterday heard from Mr. Raydon of the MRS Commission who gave us an overview of their conclusions and answered some questions for us. We've had discussions with Bob Bernero and others in the NMSS staff. We've looked at the DOE mission plan. We've looked at -- we plan to talk to somebody from the WHIP blue ribbon panel, speak to Mr. Leroy, the waste negotiator. There is enough information available in the transportation literature that we may or may not speak to people directly on that issue and

we have spent time with the staff on dry cask storage to see what that kind of a situation allows us to do. We've not explored that dry cask issue in the context of predicting capability for backup in the event that the MRS does not fly. But that's certainly an issue that we could address if we had to.

The plan at the moment is to get feedback from the Commission, continue to see whether or not we can make good sense out of this, and then provide in a sense a statement of work equivalent to what one might want to do, and then lay it in front of the Commission to see whether or not that's what you had in mind.

CHAIRMAN SELIN: I'm so excited about what you said that it was only with difficulty that I restrained myself from commenting and in most cases applauding as you went through.

I would like to make a few comments and then turn to my colleagues.

First of all, what I had in mind was not so much an impatience or patience with what was going on. It really was two things. The first is we have a wonderful committee who, in many cases, is forced to look in even more detail than our staff does or than the research people do and that's not what I

expect from an advisory committee. I mean that's part of how you pay your dues, but you have an ability to integrate, not just to review in detail. It's the wisdom and the breadth of background more than the ability to referee specific papers that I think are most useful to us.

What area would be better than the high-level waste area to take a look across? I mean the one question I wanted to answer was if all the research that is underway is done successfully, will we be any closer to an answer or not? In other words, are we asking all the right questions, not how are we doing on this question?

So, when you talk about the systems analysis approach and the overall view, that's really the second part, which is the comprehensiveness. The various things -- in other words, you have a collective individual and synergetic wisdom that's, I assume, impossible to find anyplace. I want to see that it was used in what would be most useful for me, I hope for the Commission, and the second is the area was high-level waste. Not to question the confidence limit, the confidence finding, but somewhat to look and say, "If we answer all the questions that have been asked, are we 20 percent, 90 percent to the goal?

Where do we stand? What are the questions that have to be asked?

To go into the approaches, I of course completely agree with Commissioner Rogers' approach, but let me tell you what I mean by that. That is take a look at the questions that should be answered apart from the regulatory framework to decide that this is a suitable site. That's the first question you ought to look at. Then you go and you take a look or the staff takes a look, to make it easier for you, at specific rules, specific regulations to see because it's just barely conceivable that the regulations and rules are not completely deducible from scientific principles.

But you start off with what should one know about whether this is a good site, and then you take a look and say, "Are there some other questions that the regulations force us to answer?" So, in that sense, I attach myself to Commissioner Rogers' remark and the answer. But it also says, don't worry too much about DOT regulations or even EPA regulations in the specific sense. It's more in the generic sense. What should we be worrying about transportation? What should we be worrying about source term or radiation, and then let's go look and see if the regs put a funny

spin on that.

The second -- the question which will drive your level of effort and where I want to be -- I'm not asking you -- I don't think the Commission is asking you to say how well is the research being done. That's the one question -- I wouldn't say it's off limits, but -- because that would launch into potentially a huge review of every piece of research. The question is are people asking the right questions? If they get the right answers, will those be adequate to the broader question at hand? Not a research piece by research piece review of are they doing a good job?

Now, I don't want you to stop completely at saying if they ask the wrong question. The next thing is is the approach that they're taking to answering the question broad enough for your needs, for our needs, but not a quality control on the research, just to see if they -- conceivably you'll find people taking a very narrow approach. You know, what kind of concrete for the barrier when they ought to be taking a broader approach about is this really defense in depth or not. But it's really to look at a couple of levels of depth. Are they asking the right question not just at the first level but the second and third level? Roughly speaking, is their

research plan, if carried out, successfully adequate to answer the question that from your systems analysis viewpoint needs to be answered?

As far as other players and their questions, I think I touched on that, but I think you ought to still take the same approach. We don't need the best scientists in the country to be doing a legalistic paragraph by paragraph review of DOT rules to see if it's complying the same. But I wouldn't downplay the DOT thing because you asked two questions, but I think there are three questions. One is the site, the second is the barriers but the third is the transportation. I think certainly from a political point of view and maybe even from a technical point of view that the availability of a potential transportation plan to bring 70,000 tons of high-level waste into this place or 100,000 tons eventually is absolutely critical to the acceptability of a repository.

So, I wouldn't go so lightly on that. I wouldn't just limit myself to what questions have to be asked in order to get a reasonable confidence -- oh, don't use confidence, but to know that we looked at the transportation issues as well. I think they're quite important.

The alternatives, that's good as long as one never says the MRS is an alternative to a high-level waste disposal site. It's an intermediate step, et cetera, et cetera, et cetera.

Just to reemphasize the point that you made, Doctor Steindler, the analysis -- the best output from the analysis was to come up with holes and just places where either people have inconsistent assumptions or there's some large gap left in what's going on. But I'm personally very pleased, very excited by the general tenor of what's going on and the ability to add real structure to what was really quite a banal question the way it was put.

Commissioner Rogers?

COMMISSIONER ROGERS: Well, that's fine. I agree totally with your point of view.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: If I understand what you said, Marty, and what the Chairman said, I guess I have some concern and I agree in part and disagree in part in some of the things that I heard. I think in looking at a systems analysis of this, you can look at it with different eyes. One might look at it with congressional eyes and looking at, well, there's a DOE side that has a responsibility for implementation and

there's an NRC side that has a responsibility for licensing and so forth. But then you might also look at a systems analysis from DOE's eyes and look at the implementation. Then you get into questions of availability of casks and drilling rigs, warehousing and all these things and how they fit together and are we doing the right things at the right time.

Those are more, in my mind, technical review board type of look, I would think. I thought that was the purpose of the technical review board, to look more at that and advise Congress and the Secretary. But I could also see a systems analysis from the NRC standpoint and I don't know how we exclude the regulations from this. And from the NRC eyes, it seems to me that what we'd be looking at is maybe something like the Center did of their analysis of Part 60, and I forget how they described that. I forget that terminology. But basically looking at Part 60 and saying, "What does it require? Where are the holes?" and so forth.

DOCTOR STEINDLER: Systematic regulatory analysis.

COMMISSIONER REMICK: That's it. Good term. And looking at are all the things in place, are we doing the right things, are we doing the right

research and so forth. So, it seems to me that that's more narrow than some of the things that I understood I thought you were saying. In other words, I think branching out, covering some of what one might see from DOE now.

By the way, I would say that I think the broader view would be extremely interesting and it is needed, but I'm worried about a small group of people. By the way, I agree with the Chairman on how we should use you as a Committee. You should not become staff looking into the infinite details of these things, but using your collective and collegial wisdom of look at these things and saying, "Well, we think that not enough attention is being given here," and not making the detailed technical decisions necessarily.

But I'm a little worried on some of the things I heard and I might not have understood that you're biting off or proposing to bite off a bigger bite than I think you have the resources to handle. Of course what you're saying is that could result in a study, somebody doing it and so forth.

CHAIRMAN SELIN: Let me say something at this point. At least I never had in mind the review of technical adequacy in the sense are there enough rigs available or are there enough resources.

Probably I didn't say it. What I was interested in is look at the research program, not looking at the implementation program. Five years from now, will we sit down and say, "Gosh, I really wish we had asked this question or that question five years ago"? If we really want a one line summary, that's what I was most interested in coming about.

On the other hand, the one difference I see between the regulatory analysis is I agree with your response to Commissioner Rogers. I don't think you ought to start with the rule and work from that. I think you ought to start with a more general question about what ought we want to know before we licensed the place and then go to the rule and see if something has been overlooked, but not do as legalistic a review as the Center did with Part 60 because this is not a mature rule the way some of the other rules are. So, I think you ought to start with the information and then check against the rule.

But I hope you didn't hear my saying that you should be taking a look at the logistics or the resources. I didn't intend that to be the case. This is a research review, not a program review, at least in my mind. The Commission may feel differently or you may feel differently and it may end up being

something different from what I originally had in mind when I asked you that question.

DOCTOR STEINDLER: Let me make a comment on your point.

CHAIRMAN SELIN: Sure.

DOCTOR STEINDLER: It strikes me that the most useful view is neither the Department of Energy nor the NRC, but might well be a reasonably knowledgeable technical person standing back looking at the system and then asking the question, "What are these various players in this drama doing? What should they be doing? Where are they, in fact, closing the loops?"

I had also not suggested, at least I hope I didn't suggest that we were going to count the drill rigs for 1992.

COMMISSIONER REMICK: I was using that only as an example of the DOE perspective. Those are concerns. But when it was mentioned that we'd be looking at transportation and this has political implications, I think you're getting off into an area that --

DOCTOR STEINDLER: But there are some rather straightforward technical --

COMMISSIONER ROGERS: But it doesn't

necessarily have to be political aspects of that. I mean you could look to see what's out there. What are the modes of transportation that are available outside of any political questions?

DOCTOR STEINDLER: You've got a cask. Do you know how to license it? Do you know how to build it?

COMMISSIONER REMICK: No, I agree. The licensing of the cask and so forth is our responsibility. What I'm worried about is you're biting off too big a bite and then it's going to take too long to come up with filling the holes, if they exist.

DOCTOR STEINDLER: There's, I thought, an underlying thread to your comment that it is the advisory committee that is actually going to carry out this analysis. I doubt very much whether that is a reasonable thing to do if for no other reason than that you would like -- that this ought to be done in some reasonable period of time. I would guess that one would have to enlist some parties, be they the staff or be they the Center or be they an outside contractor. Once we have defined what this task really should look like.

You're quite right, it is far larger than

four part-time folks could possibly do, even with the staff that we do have, which is quite capable.

DOCTOR MOELLER: One thought that several of us have expressed is that perhaps our report can serve as a guide to the NWTRB in terms of what they do. But I would hope that it would provide information that would be useful to them.

COMMISSIONER ROGERS: I just want to say that the Chairman asked the question of can one do -- what would be involved in doing a system -- taking a systems look at this. My own personal feeling was exactly what you expressed, namely not to do that constrained by what DOE is doing or what NRC has done in the past or what EPA or what the states or somebody else may do, but an objective technical person's view of what seems to make sense from a total systems point of view of this problem. Then take a look and see, well, what are the constraints on it that come about from the regulations, from the activities that may also be going on and where there are some real problems because of that.

I'm not sure all of our regulations are exactly the right thing for this. It's clear that other activities that have gone on independently may not be exactly the best way to do things. But to try

to take a look at the total system on what really makes sense from an objective point of view, technically objective point of view, and then turn on the constraints, but leave the constraints off to begin with because otherwise you're never going to get to what's the best way to do it. What you'll get is how you have to do it because of those constraints. Maybe some of those constraints should be removed.

COMMISSIONER REMICK: I agree, but I thought this is what the purpose of the technical review board was. Haven't they done some of that in some of their reports? I very much support the need for it being done. My question is who does that overall view?

CHAIRMAN SELIN: I think it might be a little early.

COMMISSIONER REMICK: Especially if it means we sponsor a study.

CHAIRMAN SELIN: I think it's a little early to cite exactly who does what. What Doctor Steindler talked about that I found very exciting is the idea of having some -- I don't want to call it a checklist because that makes it too mechanical, but sort of an overview that says, "Here are things that have to be done," in order to feel that the --

particularly the Commission get a feel that the right research efforts were underway so that when the license application came up, the homework was done, regardless of who was doing it.

The next step may be to find out what's being done by whom. I don't know what the next step is until we see the list. The one thing that's clear, and I'd like to hear Doctor de Planque on this as well, but one thing that's clear is the Commission is not about to go off and say, "That's wonderful. Come back in two years with the finished study," nor are you foolish -- I'm sorry. Nor are you prepared to try to do that. This is sort of a stage by stage communications and learning process.

But I guess, as Yogi Berra would say, I'll repeat myself over again. What I want to make sure is that there's a top down comprehensive but superficial gloss to go with all the bottom up work that's being done and how best to accomplish that. I don't know, but I'm interested in the approach that you --

Commissioner de Planque?

COMMISSIONER DE PLANQUE: I'm fascinated by the discussion and I'm not sure I know enough about the system yet to really sort all this out as to who

is doing what and why. I think the question that Doctor Selin has asked is fascinating and an appropriate question.

One comment I would make is anywhere in this system do you or should you put in public reaction or public perception as to how it affects the final outcome? Has that been thought about at all?

DOCTOR STEINDLER: Yes, it tends to be thought about in a negative way coming out of the technology domain. I'm not sure that we have a way to gauge the issue. What we can do readily is identify areas where public perception or impact is likely to occur and somebody needs to take it into account. To go much further than that moves us out of the area of expertise so rapidly and certainly out of the area of predictability so rapidly that other than highlighting it I'm not totally sure what one would do with it.

COMMISSIONER DE PLANQUE: I think I'm coming from this from the point of view of what kinds of questions have been asked in the past that might obstruct the system down the road and are you taking those kinds of questions into account when you're looking at the research that is underway?

DOCTOR STEINDLER: If they deal with the

technical aspects of the regulatory process that ultimately allows you to license them, those are perfectly reasonable. If they deal with either legal or partly legal questions, I'll defer to Commissioner Curtiss.

CHAIRMAN SELIN: That's very clever of you.

COMMISSIONER DE PLANQUE: Well, I'm anxious to see how this all develops.

DOCTOR STEINDLER: Let me simply make one comment. We're going to clearly look at the transcripts to make sure that we incorporate all the things that you've said. My note taking is so slow that I can't possibly --

I think one of the comments that you've made though we certainly ought to address and that is how does what is being proposed relate to some of the other activities of folks that have currently been chartered to do things? I think that distinction -- once we look at the charter and what they actually do, that distinction can be made pretty clear.

CHAIRMAN SELIN: Well, that's all implicit in the idea of looking for gaps. It doesn't just mean gaps in the research program, but gaps in the systems analysis as well.

I'd like to follow-up on Commissioner de Planque's point. I don't think anybody expects a report to come out that will say, "Okay, we've now answered all the public questions that come up," but I do think it's reasonable and was implicit in my remark about transportation to look at what people have been worried about in the past and insofar as those -- there's a subset of those questions which is amenable to technical review. Those would be candidates for issues to see if the research program is addressing them or not. You're going to have trouble parsing that sentence in the transcript, but to come up with a list of technical questions, is there a program coming out, which is in part affected by what has concerned everyday American citizens is not a completely foolish way to make that checklist.

DOCTOR STEINDLER: Yes, I think that's going to come out. Fortunately, I think many, if not all of the major concerns of the public eventually end up in the regulatory domain as something to be at least addressed in the licensing process, which is the rationale for it. So, in that sense, we would be able to cover either explicitly or implicitly public concerns.

CHAIRMAN SELIN: Commissioner Remick?

This is interesting to know if we should have another run through at this point.

COMMISSIONER REMICK: I would just say that with such coherent and consistent guidance, go forth and do good.

DOCTOR STEINDLER: It's been interesting so far.

DOCTOR HINZE: I think we all have our individual slants on that.

CHAIRMAN SELIN: But that's exactly the right process. The Commission should be expressing its concerns and you're most useful to us not by translating those into plans, but listening and coming back and saying, "Here's what you should be concerned about and here's an approach that can resolve some of those concerns." Probably that back and forth will be more useful than any specific analyses. If you help the Commission think out some of its internal inconsistencies or concerns, that's a wonderful contribution.

Commissioner de Planque?

Whatever you do now will be anti-climax, Doctor Moeller, but we are --

DOCTOR MOELLER: I'm watching the clock. I guess we should try to address the questions that

Commissioner Rogers --

CHAIRMAN SELIN: Please.

COMMISSIONER ROGERS: Well, whatever you think you --

DOCTOR MOELLER: The meeting --

COMMISSIONER ROGERS: There is the volcanic question.

DOCTOR MOELLER: Right. Do we have reports of the EPRI meeting and the other? If we do, we could just send these to --

DOCTOR POMEROY: Yes, that's what I was going to say.

DOCTOR MOELLER: All right. Let's do that.

DOCTOR POMEROY: Because of the time frame, that we do have reports and can send them to you.

DOCTOR MOELLER: Let's do that.

DOCTOR POMEROY: We'd be pleased to do that.

COMMISSIONER ROGERS: Fine.

DOCTOR HINZE: I think one of the highlights of that meeting from my standpoint was in terms of the human intrusion topic that is discussed over and over again in terms of 191. Perhaps the

kindest thing to say is that there was a complete spread of views regarding the role of human intrusion and the guidance that is provided in 191 and also the question of whether the 191 should permit the human intrusion to have a separate performance assessment, take it out of the normal performance assessment.

I think by and large people address the point that one should eliminate it and that's a role that we have taken here in the Committee before you.

COMMISSIONER ROGERS: Yes.

DOCTOR HINZE: And I think that that's really one of the key issues in that discussion that should be following.

CHAIRMAN SELIN: Doctor Moeller, you do have a volcanic issue on the --

DOCTOR MOELLER: Yes. Bill Hinze will cover that.

Go ahead, Bill.

DOCTOR HINZE: Well, let me try to be very brief. Dating of geological events and materials are extremely important in terms of prediction and this is certainly true in terms of the volcanic problem at Yucca Mountain. We have been concerned because of the uncertainties in the dating and as a result of that we thought it was time to bring together the experts

and look at the problems of the dating of quaternary the last two million years' events and how that is going to impact the prediction into the future. I think we held a very useful working group meeting that confirmed our fears that there are grave uncertainties.

For example, the nearest basaltic cone to Yucca Mountain is dated at everywhere from a few tens of thousands of years to 250,000 years. Now, geologically that's a short period of time, but in terms of developing risk analysis that's a very important aspect of it.

We had several conclusions, but one of the things that I was impressed with was the fact that DOE was really on top of this problem and in my view they were on track in terms of looking at the problem of uncertainties. I think there is a potential role for the NRC staff because there is the concern -- we are always going to end up with uncertainties and the question is how does that translate to risk. I think the NRC staff can be looking at that in terms of guidance, in terms of licensing.

That's a very brief summary. But this is an important topic and we intend to follow this up in other areas in terms of dating of the seismogenic

faults and so forth.

CHAIRMAN SELIN: Well, thank you very, very much for a really stimulating session. I wish you all a merry Christmas and a Happy New Year.

DOCTOR MOELLER: Thank you, sir.

(Whereupon, at 11:30 a.m., the above-entitled matter was concluded.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: PERIODIC BRIEFING WITH ADVISORY COMMITTEE ON NUCLEAR WASTE
PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: DECEMBER 19, 1991

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Carol Lynch

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