

CERTIFIED

ACNW-0017
PDR 6/27/90

TABLE OF CONTENTS
17TH ACNW Meeting
February 21-22, 1990

	<u>PAGES</u>
I. Chairman's Report (Open)	1-2
II. NRC Staff Review of DOE Study Plans Related to Characterization of the Proposed High-Level Waste Repository Site at Yucca Mountain (Open)	2-9
III. Meeting With the NRC Commissioners (Open)	9-10
IV. Review of Low-Level Waste Issues as Seen by the States (Open)	10-16
V. Discussion and Possible Comment on the Implementation of a Policy for Criteria for Residual Levels of Radioactivity Following Decommissioning (Open)	16-20
VI. Executive Session (Open/Closed)	20-22
A. Appointment of New Members	20
B. ACNW Future Activities	20
C. Future Agenda	22

Enclosure: See jacket

9006290046 900221
PDR ADVCM NACNUCLE
0017 PDC

DESIGNATED ORIGINAL
Certified By EMB

RS02
Q1

TABLE OF CONTENTS
APPENDICES FOR THE 17TH ACNW MEETING

- I. Meeting Attendees**

- II. Future Agenda**

- III. Documents Received**
 - A. Meeting Handouts from ACNW Staff and Presenters**
 - B. Meeting Notebook Contents**

- IV. Transcript of Meeting with Commissioners**

CONFIDENTIAL

Issued: March 31, 1990

MINUTES OF THE 17TH MEETING OF THE
ADVISORY COMMITTEE ON NUCLEAR WASTE
FEBRUARY 21-22, 1990
BETHESDA, MARYLAND

The 17th meeting of the Advisory Committee on Nuclear Waste was convened by Chairman Dade W. Moeller at 8:30 a.m., Wednesday, February 21, 1990, at 7920 Norfolk Avenue, Bethesda, Maryland.

[Note: For a list of attendees, see Appendix I. ACNW members, Drs. William J. Hinze, Dade W. Moeller, and Martin J. Steindler were present. ACNW consultants, Drs. David Okrent, Donald A. Orth, and Jacob Shapiro were also present.]

The Chairman said that the agenda for the meeting had been published. He also identified the items to be discussed. He stated that the meeting was being held in conformance with the Federal Advisory Committee Act and the Government in the Sunshine Act, Public Laws 92-463 and 94-409, respectively. He also noted that a transcript of some of the public portions of the meeting was being made, and would be available in the NRC Public Document Room at the Gelman Building, 2120 L Street, N.W., Washington, D.C.

[Note: Copies of the transcript taken at this meeting are also available from Ann Riley & Associates, Ltd., 1612 K Street, N.W., Washington, D.C. 20006.]

I. CHAIRMAN'S REPORT (Open)

[Note: Mr. Raymond F. Fraley was the Designated Federal Officer for this portion of the meeting.]

Dr. Moeller welcomed Mr. Howard J. Larson to the ACNW staff.

Dr. Moeller announced the appointment of Mr. James Sniezek to fill the position of Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations, and Research. He also announced the appointments of Mr. Frank Miraglia, Jr., as Deputy Director of the Office of Nuclear Reactor Regulation; Mr. William Russell as Associate Director for Inspection and Technical Assessment; Mr. Thomas Martin as Regional Administrator, Region I; Dr. Denwood Ross, Jr., as Deputy Director, Office for Analysis and Evaluation of Operational Data; and Mr. Clemens Heltemes as one of the two Deputy Directors for the Office of Nuclear

409.55

Regulatory Research.

Dr. Moeller announced that Mr. John Bartlett had been nominated for appointment as Director of the Office of Civilian Radioactive Waste Management, U.S. Department of Energy (DOE).

Dr. Moeller announced that the Committee members have been invited to attend the National Academy of Sciences Board on Radioactive Waste Management meeting to be held on May 23-24, 1990. The meeting will be devoted to a discussion of EPA Standard 40 CFR 191.

II. NRC STAFF REVIEW OF DOE STUDY PLANS RELATED TO CHARACTERIZATION OF THE PROPOSED HIGH-LEVEL WASTE REPOSITORY SITE AT YUCCA MOUNTAIN (Open)

[Note: Ms. Charlotte Abrams was the Designated Federal Officer for this portion of the meeting.]

Dr. King Stablein, Division of High-Level Waste Management (HLWM) and Mr. Keith McConnell, HLWM, were the presenters for this agenda item. Dr. Hinze introduced the presentation and made some opening comments in which he noted the importance of Study Plans to the characterization effort. He stated that these plans are especially important because they may contain many of the details missing from the DOE Site Characterization Plan (SCP). He noted that the staff had made a presentation to the ACNW on the Study Plan review plans approximately one year ago. Due to changes in the DOE program, it may be important to revisit this item to help define the ACNW role with respect to future Study Plan reviews.

Dr. Hinze listed specific reasons why the ACNW wished to revisit the issue of Study Plan review. These were:

- 1) The level of detail in Study Plans was agreed upon by the NRC and DOE approximately four years ago. Due to changes in DOE's program, this may need to be re-examined.
- 2) In the staff's presentation of one year ago, it was stated that the staff would be reviewing the Study Plan Review Plan after some of the Study Plans had gone through staff review. The Committee wished to know what changes were now envisioned in the review plan.
- 3) Slippages in DOE's issuance of Study Plans may result in changes in the Division of High-Level Waste Management's approach to Study Plan review such as the criteria for review and the number of Study Plans reviewed.
- 4) Many Study Plans refer to other Study Plans not yet issued

by the DOE. One of the criteria in the DOE/NRC agreement was to look in the review process at other related Study Plans. How will technical reviews be accomplished without the related Study Plans?

- 5) DOE is conducting a prioritization of Study Plans for surface-based testing. This will result in a change in the number and order of Study Plans that the NRC will receive in 1990. What are the NRC plans in relationship to establishing priorities for these studies?

Dr. Stablein began his presentation by giving some background information. He explained that in May, 1986, the NRC and DOE held a meeting in which they agreed on the content of the SCP and Study Plans. Other agreements resulting from a 1988 meeting were that the DOE would provide Study Plans to the NRC six months, but no less than three months, in advance of starting work; NRC will relay major concerns with the Study Plan to DOE within three months; and other NRC concerns would be provided to the DOE within six months. He stressed that each of these times were the maximum expected and that NRC would like the six month period to include the conduct of their review and interactions with DOE on the review.

Dr. Hinze asked if NRC staff had reviewed the May, 1986, level of detail agreement recently. Dr. Stablein answered that the staff will review that agreement if comments pertaining to level of detail are made during the review of Study Plans. He also agreed to keep the Committee informed of any developments on this matter. Dr. Hinze noted that there was a problem with the review of Study Plans without the benefit of having copies of the related Study Plans and that the level of detail agreement suggested that the DOE should show this relationship.

The Draft Study Plan Review Plan was issued in December, 1987. At that time the intent of the staff was to wait and revise this plan on the basis of experience gained from review of several Study Plans.

Dr. Stablein stated that the purpose of the Study Plan reviews was for the early identification of concerns with DOE's site characterization plans to gather information for the licensing process. Also he stated that the reviews are a way of auditing the process by which DOE develops its plans for site characterization.

The approach to review of the Study Plans was then presented by Dr. Stablein. He stated that there are potentially three types of reviews that a Study Plan can undergo. The first of these is the Acceptance review. This first type of review will be conducted on all Study Plans issued by DOE. The criteria for

this review are consistency with the NRC/DOE content agreement and the availability of the Study Plan references to ensure that the appropriate DOE documents are available during further reviews. The Acceptance Review is not an endorsement of the technical detail of the Study Plan; its goal is to answer the question of whether the Plan is worthy of further review.

The second type of review is the Start Work Review. This type of review will also be conducted on all Study Plans. The criteria for this review are whether tests or activities as part of the Study have the potential to adversely affect waste isolation or the ability to conduct other tests to characterize the site. A negative decision in this review category would result in comments similar to the SCP Objections where DOE needs to fix the problem prior to starting work.

The first two reviews will be conducted on all Study Plans issued by the DOE and these reviews will take only a few weeks. Reviewers for the first two reviews will be geoscientists, engineers, and QA specialists. During these two reviews, the technical staff will assess the need for additional review.

The third type of review is the Detailed Technical Review. Only approximately 20 percent of the Study Plans will receive this type of review. The staff will review selected Study Plans which may be related to key technical concerns identified in other forums such as other reviews, meetings, and technical exchanges. Other Study Plans that may receive a Detailed Technical Review would be related to SCP concerns or would propose the use of non-standard tests or analyses. Because an audit approach is being taken to this type of review, some Study Plans may be selected to check the Study Plan process.

The technical review will evaluate the adequacy of the study and provide information needed for licensing. Additional criteria specific to the technical concerns within the study will be added by the Technical Staff. Questions to be answered are: Does the Study Plan provide the information that (a) it is designed to provide and (b) it needs to provide?

Dr. Hinze asked whether all Study Plans that deal with potentially "fatal flaws" will be reviewed. The staff could not commit to that, but stated that these types of plans will be top candidates for review. Dr. Hinze also asked if there would be adequate time and resources for reviews of critical Study Plans, especially if several are issued at the same time. Mr. Linehan stated that flexibility in resources has been planned and that, if necessary, they would slow down work on proactive items to direct more staff toward reviews. Due to the uncertainties in DOE's schedule, it is impossible to plan. The 20 percent number

for technical review was chosen based upon the resources HLW had available at the time. The Division budgeted for ten detailed technical reviews in 1990. Originally the DOE was to issue 51 plans and the 10 budgeted reviews were based on that number.

Dr. Moeller asked whether the staff had indicated to DOE which Study Plans are the most important. The staff answered that the SCP review comments should provide some indication, in addition to DOE/NRC meeting discussions. The staff has also requested that the DOE expedite the issuance of Study Plans for ongoing studies. In addition, it was mentioned that the DOE is currently conducting a task to assign priorities to the studies. Mr. Jeff Kimball, DOE, was in the audience and elaborated on the topic of the prioritization task.

Mr. Kimball stated that there have been problems with the schedules for issuance of the Study Plans. DOE is working toward improvement in that area. DOE will keep NRC informed about schedules and the DOE Staff is willing to be flexible if a heavy load of Study Plans should be sent to the NRC at one time. They are now prioritizing surface based studies since the Exploratory Shaft Facility (ESF) is delayed and they are focusing on ongoing studies and critical issues such as volcanism, faulting and natural resources. The results of the prioritization task should be ready by fall, 1990. DOE currently has 25 Study Plans in the internal review process and 10 more are almost ready for internal review.

Dr. Steindler asked if the approval of the Study Plan means NRC will accept the results of the Study as data useful for licensing. Mr. Linehan answered that additional discussions with DOE may be necessary and, due to the lack of knowledge about the site, the NRC staff may wish to reevaluate the Study. Also the interpretations derived from the data may be subject to question. The first review should tell the DOE that the study, as laid out, should provide the information needed for licensing.

Dr. Moeller asked about the level of internal QA review on the Study Plan Review Plan. Dr. Stablein stated that the staff has a review group for QA aspects of the Study Plans that is independent of the group for QA of the Review Plan. Dr. Moeller also asked if the State of Nevada and other affected parties had input to the Review Plan and will a section be added to reflect ACNW involvement in the Study Plan review process. Dr. Stablein answered that input from the State of Nevada was always appreciated and that a section on ACNW involvement will be added as appropriate.

Dr. Hinze asked about NRC plans in reaction to the DOE prioritization studies. Mr. Linehan answered that they are tracking this and requesting a DOE/NRC interaction.

Mr. Kimball stated that, due to the amount of material required in a Study Plan by the Level-of-Detail Agreement, preparation of Study Plans has taken longer than anticipated. The DOE Staff has concerns with the prescriptiveness of the level of detail and believes that the technical procedures that go with the Study Plans may fulfill part of the information needs.

Dr. Hinze pointed out that many of the problems with the Study Plans stem from the vague statements within them, such as, test "may" be done, or "possibly" will be done. He also asked about the intentions of the NRC staff with respect to reporting to the ACNW regarding the three types of Study Plan reviews. He noted that the written comments for the technical review to be discussed at this meeting were received only the morning of the meeting, thus making it difficult for the Committee to fully understand the staff's position.

Dr. Stablein stated that it is the staff's intention to send material to the Committee far enough in advance for the Committee to review it well ahead of the presentation. Mr. Linehan stated that the staff's plans thus far have not involved "any significant ACNW interaction." This briefing was considered to be an information briefing and there are no specific plans at this time for coming back to the ACNW on Study Plans. This is open for discussion, but the staff is mainly planning for ACNW interactions on technical positions and rulemakings.

Following Dr. Stablein's presentation, Mr. McConnell presented the Committee with an overview of the results of the staff's detailed technical review of the Study Plan on the location and recency of faulting near prospective surface facilities. Since the Committee did not receive the staff's specific detailed comments until just prior to the meeting, Mr. McConnell kept his presentation directed toward general concerns with the plan.

According to Mr. McConnell, the plan is for a tectonics related study and was prepared for the DOE by Sandia National Laboratories. It is the first Study Plan to go through NRC's review cycle. The Study Plan was received on June 30, 1989, the Acceptance Review was completed on September 8, 1989, and the Start Work Review was completed on November 24, 1989. A letter went to the DOE on November 24, 1989, stating that these reviews were complete.

Mr. McConnell stated that the review was a team effort by a number of NRC technical staff. Dr. Hinze asked if the Center for Nuclear Waste Regulatory Analyses (CNWRA) had a role in the Study Plan reviews. Mr. McConnell answered that CNWRA personnel are used when the staff does not have the resources or the expertise necessary. Dr. Russell of the CNWRA is kept informed by NRC on

the review status and has copies of the Study Plans; therefore, if he sees an area for CNWRA input, he is encouraged to contact the NRC.

Mr. McConnell stated that the objective of the Study Plan is to "gather geologic data from Midway Valley and to identify areas where late Quaternary faults are absent." The purpose of the plan is stated in the title. The staff's overall comment on this Study Plan is that, although DOE may fulfill the objective of the plan, they will not necessarily fulfill its purpose. The plan also contains inconsistencies which relate to the extent of the study. For example, the SCP states that the study will address faults with apparent Quaternary offset, whereas in the Study Plan it is stated that it will address late Quaternary and "significant late Quaternary."

Mr. McConnell showed that the study has two planned activities. One will identify appropriate locations for long trenching in Midway Valley and the other will be to conduct the actual trenching. Basic criteria of the review were to see if activities could meet the design or data requirements stated which were to assess the potential for surface faulting. These data requirements raised concerns in the staff's SCP review.

Mr. McConnell showed a number of diagrams to familiarize the Committee with the location of the study, the surface facilities, local faults, and other repository design features. Dr. Hinze posed the question of whether the waste ramp would be considered part of the surface facilities or part of the repository. Mr. Linehan replied that it is considered to be part of the repository.

Mr. McConnell said that there is uncertainty about the significance of the Midway Valley fault. He cited various references and showed examples of where certain writers would place the location of the Midway Valley fault in the area of the proposed surface facilities. He stated that the only direct evidence he knew of for the fault was in Calico Hills, northeast of Yucca Mountain. He showed that one possible interpretation of the faulting in the area could be a connection of north-south trending faults to a master fault at depth. He stated that the USGS has indicated that this fault model is one which they propose to address. As part of their review of this Study Plan, the staff is asking DOE to tell them where, in what study, this model will be addressed.

Based on the area outlined in the Study Plan, Mr. McConnell stated that the only area that did appear to be addressed was directly in the area of the proposed surface facilities and the study would be confined to the upper surface, or the Quaternary alluvium, giving the Study Plan a very limited scope.

Dr. Hinze asked about microseismicity in the area and whether the network to evaluate it was adequate. Mr. Michael Blackford, NMSS, replied that the resolution of the network is good, and there is little in the way of microearthquakes in the vicinity of Yucca Mountain.

Mr. McConnell stated that the DOE had completed this Study Plan prior to the issuance of the NRC Site Characterization Analysis (SCA). For this reason the staff could not expect SCA comments to be addressed in this Study Plan. Since applicable SCA comments were not objections, it was not necessary for the DOE to resolve them prior to issuance of the Study Plan. Appropriate SCA comments would be called to the DOE's attention and included as part of the Detailed Technical Review comments to be sent to the DOE.

Mr. McConnell pointed out that this Study Plan does not constitute the entire effort of assessment in Midway Valley, but it is unclear to the staff where, under what other Study plan, the other effort will fall. The staff believes that the purpose, goals, and objectives of the Study plan need to be clarified for two reasons:

- 1) there appears to be inconsistencies in statements concerning the purpose, objectives and goals of the investigation, and
- 2) it is unclear which data will be collected in this study versus another study, or which study will provide which information.

The staff has concerns with the characterization parameters and data requirements that form the basis of the study. Also, they are concerned that this study may not obtain the information for licensing that it is intended to provide. There is also a concern with the way the data requirements were generated and this concern was stated in the SCA.

The staff views the review as an early flag to the DOE. They can address the concerns by asking NRC to meet and close out an open item or comment, or the DOE can address the concerns as part of other Study Plans that they are now generating.

Dr. Hinze requested that the ACNW be notified of any responses from the DOE to the NRC staff's comments. He also asked if there would be any summary cover letter to go with the comments generated by the staff. Mr. Stablein stated that there will be a cover letter in which the staff also will call DOE's attention to the relevant SCA comments.

Dr. Moeller asked if the lack of response to SCA comments

warranted the staff requesting that the DOE rewrite the Study Plan. Dr. Stablein stated that the SCA comments are important and the DOE needs to address them in some forum. Mr. Max Blanchard, DOE, stated that DOE is currently preparing a package of comment responses to the SCA. He also stated that there will be revisions to the Study Plans.

Mr. Kimball, DOE, stated that he did not believe that the comments would prevent them from going forward with the plan. They are also still undecided as to what mechanism they would like to use to interact with NRC on the Study Plan review comments. Dr. Steindler asked how many Study Plans were produced prior to the SCA? Mr. Blanchard stated that all Study Plans going through the DOE process now have benefited from the SCA comments.

Dr. Hinze expressed his concern with the timing and uncertainty of geophysical tests which could be used to define areas for trenching. Mr. Blanchard stated that they are still evaluating the geophysics white paper that will integrate the geophysical methods that could be applied to various studies.

Mr. McConnell closed his presentation with a viewgraph of a diagram taken from the SCP in which proposed seismic reflection surveys were shown. He noted that these types of surveys would be one geophysical technique to identify faults in the subsurface, yet, as proposed, none of the surveys went through the study area of this Study Plan. He added that examples of this type cause the staff to believe that there may be gaps in the data collection effort.

[A memorandum from Dr. Moeller, dated February 26, 1990, was sent to Mr. Robert Browning, Director, Division of High-Level Waste Management, expressing the Committee's interest in being kept informed and in reviewing selected DOE Study Plans.]

III. Meeting with the NRC Commissioners (Open)

[Note: Mr. Raymond F. Fraley was the Designated Federal Officer for this portion of the meeting.]

The Committee reviewed the areas of interest to be discussed with the Commissioners. The Committee recessed at 1:15 p.m. to travel to the One White Flint North building, Rockville, Maryland.

The NRC Commissioners and the Committee discussed the following topics:

- Report on trip to the West Valley Demonstration Project

- Report on trip to the Center for Nuclear Waste Regulatory Analyses
- ACNW report on the implementation of the EPA high-level waste standards
- ACNW report on the NRC proposed Policy Statement on Exemption from Regulatory Control
- ACNW report on the NRC program on low-level radioactive wastes
- Division of responsibilities between ACNW and ACRS.

[In accordance with Staff Requirements Memorandum for Parler from Chilk, dated June 9, 1989, the Office of the Secretary provides a transcript to the ACNW as the record for this portion of the meeting. The transcript is attached as Appendix IV.]

The meeting with the Commissioners was adjourned at 3:30 p.m. by Chairman Carr.

IV. REVIEW OF LOW-LEVEL WASTE ISSUES AS SEEN BY THE STATES (Open)

[Note: Ms. Charlotte Abrams was the Designated Federal Officer for this portion of the meeting.]

Mr. William Dornsife, Chief, Division of Nuclear Safety, Department of Environmental Protection, Commonwealth of Pennsylvania, presented a perspective on low-level waste programs as seen by the States. For eight years, Mr. Dornsife was the Chairperson of the Conference of Radiation Control Program Directors Low-Level Waste Management Committee, and recently, was elected to the Executive Board of that conference. He is a voting member of the Low-Level Waste Forum, on the Executive Committee of the Low-Level Waste Forum, and a voting member of the host state Technical Coordinating Committee. As Chief of the Division of Nuclear Safety for Pennsylvania, Mr. Dornsife manages their Low-Level Waste Program and their Nuclear Safety Program.

The Nuclear Safety Program calls for a qualified engineer to be assigned to each nuclear power site in Pennsylvania. The state engineer accompanies the NRC inspectors and conducts independent inspections. There is a close interface between the engineer and NRC's Region I staff.

The Low-Level Waste Program deals with the responsibilities of

Pennsylvania as the host state for the Appalachian Compact that includes the states of Pennsylvania, Delaware, Maryland, and West Virginia.

Mr. Dornsife began his discussion with a perspective of how his office and the State have dealt with public concerns and issues other than those of a technical nature. He said that there is a recognition that the public is very skeptical about radioactive waste disposal and the public is concerned that low-level waste be safely isolated and monitored. The states, in Mr. Dornsife's opinion, have done a good job in implementing the responsibilities given them under the Low-Level Policy Amendments Act. Some states have now reached the stage of selecting a final disposal site and some of those sites have been accepted by the public.

Mr. Dornsife said that the states are in a unique position. Although nuclear power plants generate approximately 80% of the volume of low-level waste and approximately 95% of the radioactivity, the states have no authority over nuclear power plant regulation.

He stated that, in approaching these problems, the Commonwealth of Pennsylvania has taken the attitude that a high degree of credibility with the public must be developed. He also stated that, although the NRC technical staff is "second to none," there is a credibility gap with how the public perceives that the NRC regulates radioactive materials.

As part of the development of credibility, he believes that good communication is first. All public concerns are considered important; therefore, they have set up their program to consider the interest of all the varied groups, giving them access to decision makers and allowing some degree of local control. Local control is implemented through a legal provision for host municipal inspectors who will have full access to the low-level waste facility. Funds for supporting this program are derived from a surcharge on the waste.

The local inspectors have authority to shut down the facility if they see a health and safety violation. These inspectors will be required to have specific qualifications and training and there will be procedures on what constitutes a legitimate health and safety reason to shut down a facility. The ultimate authority will be the state office, but the local inspector will have authority to issue a stop-work order.

Mr. Dornsife stated that the Nuclear Safety Program office has the responsibility to implement the State's low-level waste program. To begin with, they are required to select and enter

into a contract with an operator who will be responsible for siting, design, construction, operation, and decommissioning of the facility.

When the original request for operators was presented by the State, no one submitted a proposal due to the amount of up front money necessary and the possible financial risk to the operator. For this reason, there is currently a move for legislative action to approve a bill that will place a fee on all nuclear power plants in the Appalachian Compact to pay for the Phase 1 preconstruction activities which will occur prior to receipt of the license application.

In response to a question by Dr. Orth on how the Commonwealth of Pennsylvania will be able to impose this fee on out-of-state facilities, Mr. Dornsife stated that they have a provision in their law that will allow any waste generator to be a voluntary contributor to the fund. As such, the generator will receive full benefits such as interest on the money and credit toward later disposal.

Chem-Nuclear has been selected as the operator for Pennsylvania. A negotiated contract will be executed as soon as the fee bill is passed. At that time they will begin the site screening process using specific siting criteria. The operator is to identify three potentially suitable sites and submit those to Pennsylvania's Environmental Quality Board which consists of cabinet members such as Commissioners and State department heads. The Board will evaluate whether the sites meet the regulations and are three of "the best" sites before characterization can begin. After characterization of the three sites, the operator will select one site and submit a license application for that site.

Dr. Orth questioned the use of the term "best sites." Mr. Dornsife stated that the term "best sites" appears in the rules. They have two categories of criteria in their siting regulations: disqualifying criteria and evaluation criteria. Disqualifying criteria are, for example, lands such as parks or scenic areas. Evaluation criteria are developed by weighing public opinion through meetings and public contact. Then, based on the administrative record, the three "best" sites will be chosen.

Mr. Dornsife stated that the development of their regulations was similar to the federal process. They developed a draft rule and received a lot of public input early in the process.

An Advisory Committee developed the siting criteria and the draft regulations. The draft regulations were approved by the Environmental Quality Board and were then published for comment.

Public meetings and a public hearing were held and the rules were finally approved.

The Commonwealth of Pennsylvania expects a license application to be submitted by early 1993, however, Mr. Dornsife stated that they may not meet the January 1, 1996, deadline. In that event, the Governor's certification included provisions for storage after January 1, 1996. All their licensees are able to store on-site if license amendments are granted and some expand their storage areas.

Dr. Moeller asked about the stringency of the siting criteria. Mr. Dornsife replied that the Advisory Committee members, with appropriate expertise, made sure that the siting criteria were not unreasonable. He stated that the Advisory Committee estimated that the disqualifying criteria will eliminate 20 to 30 percent of the land area of Pennsylvania from consideration.

Mr. Dornsife discussed the different disposal methods and operators chosen by the host states. California's operator is U.S. Ecology and they will be using enhanced shallow land burial at a desert site. California is ahead of all the other states in establishing a facility and is currently reviewing a license application. Texas has selected a final site 50 miles east of El Paso and they are currently characterizing it. The site is also a dry site, but due to public concern, they will be putting high activity waste in a below grade vault and lower activity waste in concrete canisters. Nebraska has also chosen U.S. Ecology as their operator and has chosen a final site. Their facility will be an above grade concrete building covered by an earthen cover. Chem Nuclear has been chosen as the operator for Illinois, North Carolina, and Pennsylvania. All three will store waste in concrete overpacks placed in an above grade vault.

Pennsylvania began development of design criteria in 1985. They selected an Advisory Committee which consists of 21 people representing various environmental groups, professional groups such as engineering and geological societies, local government, utilities, and political groups. In addition, the Committee also includes four representatives from the State legislature. They do not ask individuals to serve on this Committee, but rather ask each organization to appoint their own representative.

Goals or criteria set were that the operator provides long term care for the wastes and provide adequate monitoring. An important goal was waste isolation. Pennsylvania law bans shallow burial and requires an above grade engineered facility. There are also structural stability requirements for each class of waste. Pennsylvania's operator has committed to meet a 500 year stability requirement for all classes of waste and will put

all waste in a concrete overpack. The overpack will also serve to satisfy their recoverability requirements.

Mr. Dornsife stated that they are trying to identify a site that will independently, without the engineered structure, meet the Part 61 performance objectives. They also have to show that the engineered structure can independently satisfy the performance objectives for active institutional control for 100 years. There is an additional passive institutional control period for the life of the waste. There is also the criteria that call for preventing contact of the waste with water.

Pennsylvania law requires a zero release from the facility. Their requirement for disposal unit monitoring requires that they have both on-site and off-site monitoring. There is also a requirement that if any radiation is detected during off-site monitoring, the licensee or custodian has to take immediate action to trace and stop the release. Their standards require that there be zero release for 500 years; then what is left in the waste should present no greater risk than the soil in which the waste was disposed. In addition, any member of the public located within five miles of the facility can request monitoring of their water or request a whole body count. This service is paid for by a surcharge on the waste.

Mr. Dornsife also stated that Pennsylvania has an ALARA goal that requires that inadvertent intruders have no more exposure than the public. They require intruder protection for both Class B and C wastes. This means both require an engineered barrier such as the planned overpack.

Their regulation also addresses special concern wastes such as Class C, mixed waste, and naturally occurring and accelerator-produced radioactive materials (NARM). They believe that, due to the small volume of Class C waste, this waste should go to one facility. Mr. Dornsife stressed that changing the federal law at this time would create problems for the states. They plan to dispose of their Class C waste in a manner in which it can be easily monitored and recovered. Then, if there is a separate site later for Class C waste, it can be easily recovered and sent elsewhere. Their definition of LLW includes NARM and their regulations give limits for NARM.

The state has a requirement that the waste remain dry even during emplacement. Therefore, they will have a temporary building on tracks that can be moved to cover the waste. After emplacement there will also be an engineered cover over the facility to impede water and protect the structure.

Mr. Dornsife stated that the states need technical assistance from NRC. He urged NRC's Office of State Programs to continue

biannual meetings with the states and asked that the staff have a workshop on the below grade vault review. The states, he said, would like design guidance on above grade vaults and guidance on how to develop standard review plans for those vaults.

They also need validated performance assessment codes and a better system to estimate iodine-129 and carbon-14 inventories. Due to questions about pathways, there needs to be more work in the source term, inventory, and pathways. He also noted the LLW forum's desire for a uniform national manifest system for LLW.

The Commonwealth of Pennsylvania will be implementing a memorandum of understanding (MOU) with the NRC to allow Pennsylvania to inspect LLW shipments from NRC licensees. Pennsylvania wants the other states in their compact to help with the inspections. If the other states do not help, they intend to perform out-of-state inspections themselves. They will inspect the final package before it is shipped for disposal. They will examine the waste classification, determine if stability requirements were met, and conduct measurements of associated radiation levels.

Pennsylvania is also working on the development of guidance for establishing when waste is waste and when it is a material. They hope to find out how much mixed waste is being generated and define ways to minimize the volumes. Mr. Dornsife is not convinced that Pennsylvania will need a mixed waste facility. The state intends to issue a paper based on their efforts on the problem of mixed waste.

Mr. Dornsife also noted inconsistencies between NRC and EPA rules. He believes that it is up to the licensees to identify these inconsistencies. He stated that NRC should be more proactive in finding out what inconsistencies exist. He believes that dual regulation is workable.

He also discussed Below Regulatory Concern (BRC) and stated that he supports the concept, but in moderation. He believes that 10 millirems for decommissioning is appropriate, but 1 to 4 millirems per year is more acceptable for consumer products or LLW. Dr. Shapiro stated that he never had trouble with the public accepting 10 millirem if they were given the facts about background radiation.

This briefing was for information only. No Committee action was taken.

V. DISCUSSION AND POSSIBLE COMMENT ON THE IMPLEMENTATION OF A POLICY FOR CRITERIA FOR RESIDUAL LEVELS OF RADIOACTIVITY FOLLOWING DECOMMISSIONING (Open)

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

Dr. Robert Meck, Acting Section Leader and Senior Project Manager, Office of Nuclear Regulatory Research (RES), was the principal presenter. He was assisted by Dr. Donald Cool, Branch Chief, Radiation Protection & Health Effects Branch, RES.

Dr. Meck indicated his intent to first discuss NUREG/CR-5512, "Residual Radioactive Contamination from Decommissioning-Technical Bases for Levels to Translating Contamination Levels to Annual Dose-Draft Report for Comment" and then to discuss "Interim Release Criteria for Decommissioned Structures and Soils." [Both documents were previously distributed to ACNW members and Consultants in attendance].

Dr. Meck discussed the history of the Technical Basis Report, pointing out that the unit concentration values for over 200 nuclides were included in the report and both soils and structures were considered. He discussed the pathways that were considered (direct exposure, secondary ingestion, inhalation, food and drinking water.) Dr. Moeller had questions regarding the drinking water pathway. Dr. Meck noted that the parameters for the rate at which the inventory is deposited in the drinking water is described in detail in the report.

Dr. Hinze asked what model was used and how standard it was. Dr. Meck noted that it was a well verified model based on the GENIE code, and has been used previously by DOE. Where different amounts and parameters from Part 61 were used, the variables were noted and referenced and the model flexibility documented. In response to another question from Dr. Hinze, Dr. Meck noted that there were "flags" built into the model to indicate if the limits have not been met. Should the licensee not meet the limits, the parameters could be analyzed in more detail to determine if a further refinement of the parameters then met the limits.

Dr. Steindler asked whether the model could give a false positive reading. Dr. Meck responded that assurance comes from using reliable source data and, in addition, comparison with criteria used in the past by the NRC. In general, these checks were within a factor of two.

Dr. Moeller questioned the model's quality assurance conformity. It was pointed out that it meets ANSI Standards and has been further checked by DOE and NRC.

Dr. Meck pointed out the criteria had two applications: (1) replacing the table in Regulatory Guide 1.86 for the release of structures, and (2) replacing the values in Option 1 of the Fuel Cycle Branch Technical Position (BTP) for uranium and thorium in soil. He also pointed out three limitations of the criteria; as follows: (1) they do not apply to burials of radioactive materials on a site (only to the first 15 cm), (2) they do not explicitly include consideration of indoor radon, and (3) they do not include consideration of tools or equipment that could be reused or recycled. The NUREG report is out for public comment with a ninety day comment period, commencing from the date of its availability in the Federal Register, which was February 21, 1990.

Dr. Moeller had several questions on the planning sequence rule, future rulemaking as needed and the issuance of a regulatory guide. Dr. Moeller suggested that there was a need to be clearer.

Dr. Orth pointed out errors in the Tables, questioning whether any columns were correct. He also asked who did the conversions. Dr. Meck pointed out the RES staff was aware of the regrettable errors (wrong conversion factors). He also pointed out that the Tables were not part of the NUREG document, they were prepared separately. He noted that Pacific Northwest Laboratories (PNL) did the conversions and that he believed, the pCi/gm and dpm/100 cm² columns were correct. However, the NRC staff will review all data in detail.

Dr. Meck pointed out that the criteria were based upon the Commission policy of 10 mrem annual total effective dose equivalent (TEDE) utilizing the PNL report as the technical basis.

With regard to residual soil contamination in establishing what is acceptable, Dr. Okrent questioned whether the staff had in mind a limited number of sites and a limited amount of soil. Dr. Meck indicated the criteria was generic. The number of sites and their geographical size are limited. Dr. Okrent also questioned whether 10 mrem/year of people-induced changes on a national basis is acceptable. Dr. Meck responded that, as an exposure limit for the entire United States, one would not say that it is acceptable.

Dr. Shapiro questioned whether the surface contamination limits were for fixed contamination. Dr. Meck pointed out that the modeling assumes that they are basically fixed but that, through oxidation or some other process, they could be removable. Licensees will have to determine what nuclides are fixed.

Dr. Steindler questioned external dose sensitivity studies mentioned in Appendix A, indicating that he could not find references to applicable experimental data for the sensitivity studies. Dr. Steindler stated that he was looking for some correlation between the calculated and experimental results. Dr. Meck responded that he was not certain whether they were indeed based on experimental measurements.

The staff did not conduct independent confirmatory measurement while preparing this report. Dr. Shapiro questioned inhalation/ingestion and whole body external doses. Dr. Meck noted that the NRC had adopted the ICRP philosophy because the staff believes it was state-of-the-art science and that he would be interested in further ICRP developments.

Dr. Okrent questioned whether the released soil could be used in future housing developments. Dr. Meck confirmed that unrestricted release meant just that. Dr. Okrent discussed lifetime cancer risks noting that the 10 mrem number is larger than one sees for many other involuntary societal risks. Dr. Meck responded, noting that there is not a logical pattern to the factors that society uses to accept or reject risks.

Drs. Steindler, Shapiro and Moeller entered into a wide ranging discussion on how the numbers in the Tables in the Interim Release Criteria were established, how the values corresponded to each other, the role of the Branch Technical Position (BTP), how work is released following decontamination, how values are measured (at 1 meter or at 2"), etc. These questions, including the use of the BTP, were discussed by Dr. Meck who pointed out that the BTP allows ~30 pCi/gm soil whereas the NUREG report allows 15 pCi/gm (uranium). Dr. Shapiro noted that inspectors often hold their meters at the surface rather than at 1 meter above the surface and that this could perhaps result in a difficult situation if there was a substantial dose rate at the surface.

Dr. Steindler questioned how 5 μ R/hr above background at 1 meter equated to 10 mrem noting that his "simplistic arithmetic" differed by a factor of 3. Dr. Meck pointed out that the staff's calculations came to 11 mrem (compared to 10). Dr. Steindler noted that he believed that the refinements (indoor/outdoor hours, shielding factors, NCRP 94 conversion factor, etc.) were too specific for a number that was on an "already shaky bases." He then indicated that the licensee would need to know the underlying assumptions and bases for the models. Dr. Meck pointed out that he had envisioned this information would be provided in the Regulatory Guide.

Dr. Moeller questioned whether 5 μ R/hr applied both to outdoor

soil and to inside facilities. Dr. Meck pointed out that the answer is yes; implicit is the assumption that the facility would be used for commercial purposes only.

Dr. Shapiro questioned where radium-226 was found to be a problem. Dr. Cool pointed out that this radionuclide was a problem in the DOE UMTRA and FUSRAP cleanup projects.

Dr. Hinze noted he was still searching for a "warm, fuzzy feeling" and particularly focused on code comparison, how codes performed with different assumptions and parameters, etc. After discussion, Dr. Meck noted that "the limits themselves that came out with the various codes will manifest that quantification."

Dr. Shapiro noted that the modeling was a simplistic, tenuous, and very vulnerable first part, that is, the source term and its dissipation into the environment. After this is identified, then the health physicist takes over and goes through a very complex process and does extremely complicated calculations based on the initial simplistic source term.

Dr. Steindler asked whether if the 10 mrem were downgraded, the resulting calculations were linear. The reply was, yes, except for drinking water.

Dr. Moeller explained in some detail the EPA radon remedial action limits; the bottom line of these calculations and relationships being that 1 Working Level Month (WLM) comes out to yield an effective dose equivalent of about 1 rem. NCRP gives the annual dose to the average member of the U.S. public from radon and radon decay products as 200 mrem, saying that the average radon concentration in the average U.S. home, on the basis of NCRP estimates is a little less than 1 pCi/liter.

In summing up, Dr. Moeller pointed out that the ACNW appreciated the staff coming in with a working draft. He assumed the transcript of this session, coupled with the direct interfacing at the meeting, would provide satisfactory comments for the staff to consider. Dr. Cool concurred. Dr. Moeller pointed out that the staff should particularly consider the Committee's comments on: 10 mrem/yr criterion and its usage; the verification of the numbers and modeling in the NUREG document; the placement of a cap on some of the extremely large numbers in the tables, and the validity of generic models in the real world.

The last question prior to adjourning this session was by Dr. Shapiro who noted that there was no recognition of the use of wipes. Dr. Cool pointed out that while he certainly recognizes their utilization and practical importance, the criteria purposely provide no information on how to demonstrate compliance with the numbers in the technical basis document tables.

The Committee agreed that a letter on the interim criteria would not be needed at this time. The staff agreed to incorporate the Committee's comments and return for further discussions after the SECY paper had been provided to the Commission.

VI. EXECUTIVE SESSION (Open/Closed)

A. Appointment of New Members (Closed)

The Committee discussed the qualifications of candidates proposed for nomination to the ACNW. The Committee also discussed future requirements for consultants, fellows, and staff.

B. ACNW Future Activities

1. EPA's Proposed Revisions of the Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes

In response to Commissioner Carr's request for additional guidance on the implementability of the EPA Standards, the Committee agreed to invite representatives from the following organizations to their next meeting:

- Environmental Protection Agency
- EPA's Science Advisory Board, High-Level Waste Disposal Subcommittee
- Nuclear Waste Technical Review Board
- National Academy of Sciences Board on Radioactive Waste Management
- Advisory Committee on Nuclear Facility Safety, DOE
- U.S. General Accounting Office
- New Mexico's Environmental Evaluation Group

The invitees will be asked to address issues, such as the question of the deterministic versus probabilistic approach, whether the standards are too stringent, what standards would they propose and why, and other issues of mutual interest and concern.

2. National Academy of Sciences Board on Radioactive Waste Management

Dr. Moeller agreed to attend the Board meeting with DOE's Nuclear Facilities Safety Committee on March 5, 1990, as an observer.

The Committee agreed that one or two members should participate in the Board meeting on May 23-24, 1990. The meeting will be devoted to a discussion of the EPA Standard 40 CFR 191.

3. Geological Mapping Studies
Dr. Hinze suggested that there may be some concern about the geological mapping for the exploratory shaft emplacement and the proposed changes in the drilling of the exploratory shaft. He suggested that the Committee invite representatives from either the Bureau of Reclamation or the U.S. Corps of Engineers to brief the Committee on this issue. A working group meeting will be planned.
4. Pathfinder Atomic Power Plant Dismantlement
The Committee agreed to the suggested postponement of this review until the April meeting.
5. Technical Position on Stabilization/Waste Forms
The Committee agreed to the requested postponement of this review until the April meeting.
6. "White Paper" on Geophysics
The Committee agreed to postpone this briefing until the April meeting.

17th ACNW Meeting
February 21-22, 1990

22

C. FUTURE AGENDA

Appendix II summarizes the tentative agenda items that were proposed for future meetings of the Committee.

The 17th ACNW meeting was adjourned on February 22, 1990, at 4:25 p.m.

submitted in accordance with specified instructions.

5. Who will be required or asked to report: All persons licensed by the Commission or Agreement States to possess source or special nuclear at an installation specified on the U.S. eligible list as determined by the Secretary of State or his designee and filed with the Commission, as well as holders of construction permits and persons who intend to receive source material.

6. An estimate of the number of responses: 43

7. An estimate of the total number of hours needed to complete the requirement or request: Approximately 4.7 hours per response plus 800 hours per recordkeeper. The total annual industry burden is 5,004 hours.

8. An indication of whether section 3504(h), Pub. L. 96-511 applies: Not applicable.

9. Abstract: 10 CFR part 75 establishes a system of nuclear material accounting and control to implement the agreement between the United States and the International Atomic Energy Agency. Under that agreement, NRC is required to collect the information and make it available to the IAEA.

Copies of the submittal may be inspected or obtained for a fee from the NRC Public Document Room, 2120 L Street, NW., Washington, DC.

Comments and questions may be directed by mail to the OMB reviewer: Nicolas B. Garcia, Paperwork Reduction Project (3150-0055), Office of Management and Budget, Washington, DC 20503.

Comments may also be communicated by telephone at (202) 395-3084.

The NRC Clearance officer is Brenda Jo. Shelton, (301) 492-6132.

Dated at Bethesda, Maryland, this 30th day of January 1990.

For the Nuclear Regulatory Commission,
Joyce A. Amenta,

Designated Senior Official for Information Resources Management.

[FR Doc. 90-2812 Filed 2-6-90; 6:45 am]

BILLING CODE 7590-01-M

Advisory Committee on Nuclear Waste; Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 17th meeting on February 21, 22, and 23, 1990, Room P-110, 7920 Norfolk Avenue, Bethesda, MD, 8:30 a.m. until 5:00 p.m. 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).

The purpose of the meeting will be to review and discuss the following topics:

A. *Meeting with the Commissioners (Open)*—The Committee will discuss with the Commissioners items of interest that will include as appropriate:

- Report on trip to the West Valley Demonstration Project
- Report on trip to the Center for Nuclear Waste Regulatory Analyses
- Discuss ACNW report on the implementation of EPA high-level waste standards
- Discuss NRC low-level waste programs and activities
- Other items of mutual interest

B. *Site Study Plans (Open)*—The Committee will be briefed on the schedule for future DOE Study Plan submissions, the criteria used by NRC to select Study Plans to be reviewed in depth, and other items of interest. The staff will present the status of their review on selected Study Plans relating to the HLW repository site characterization. The staff's review of Study Plans on (1) Evaluation of the Location and Recency of Faulting Near Prospective Surface Facilities and (2) Characterization of the Yucca Mountain Quaternary Regional Hydrology (tentative) are expected to be complete.

C. *Meeting with the Chairman of the LLW Committee of the Conference of State Radiation Control Program Directors (Open)*—The Committee will discuss with Mr. William P. Dornsife, Chief, Division of Nuclear Safety, Bureau of Radiation Protection, Department of Environmental Protection, Commonwealth of Pennsylvania LLW problem areas, including issues concerned with naturally occurring and accelerator produced radioactive material (NARM).

D. *Radioactive Contamination Following Decommissioning (Open)*—The Committee will discuss and possibly comment on the implementation of a policy regarding the criteria for acceptable residual levels of radioactive contamination following decommissioning.

E. *New ACNW Members (Closed)*—The Committee will discuss qualifications of candidates proposed for nomination as ACNW members.

F. *Committee Activities (Open)*—The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

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 members of the public, recordings will be permitted only during those portions of the 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: February 1, 1990.

John C. Hoyle,
Advisory Committee Management Officer.
[FR Doc. 90-2805 Filed 2-6-90; 6:45 am]
BILLING CODE 7590-01-M

[Docket No. 50-461]

Illinois Power Co., et al., Partial Denial of Amendment to Facility Operating License and Opportunity for Hearing

The U.S. Nuclear Regulatory Commission (the Commission) has denied, in part, a request by Illinois Power Company (IP), and Soyland Power Cooperative, Inc. (the licensees), for an amendment to Facility Operating License No. NPF-62 issued to the licensee for operation of the Clinton Power Station, Unit 1, located in DeWitt County, Illinois.

The staff has denied three proposed changes to Technical Specification Table 3.3.2-2 concerning time-limit values specified for timers and two proposed changes to Technical Specification Tables 3.3.7.5-1 and 4.3.7.5-1 concerning accident monitoring instrumentation. The purpose of these proposed changes was to reconcile the format of the time limits as they appear



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

February 12, 1990

Schedule and Outline for Discussion
17th ACNW Meeting
February 21-22, 1990
Bethesda, Maryland

Wednesday, February 21, 1990, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland

1) 8:30 - 8:45⁰ a.m.

Opening Remarks by ACNW Chairman (Open)

- 1.1) Conduct of Meeting (DWM/RKM)
- 1.2) Items of current interest (DWM/RFF)

2) 8:45⁰ - 11:40⁴⁰ a.m.

Discussion and Comment on Study Plans
Related to the High Level Waste Repository
Site Characterization (Open)
(WJH/CEA)

- 2.1) General Explanation of Purpose,
Goals of Study Plan Review
(NRC staff)
- 2.2) Discussion of NRC staff review process for
Study Plans
(NRC staff)
 - . Bases for selection of those receiving
technical review
 - . Percent audited, why is this sufficient?
 - . Depth/Types of review
 - . How are reviews conducted, by whom?

10:00 - 10:15 a.m. BREAK

2.3) Briefing and Discussion of Study Plan

- . Evaluation of the Recency of Faulting near
Prospective Surface Facilities (NRC Staff).

2.4) ACNW Practices & Procedures
Discussion of method for Selection (criteria
for) and Review Process for ACNW Review of
Study Plans (ACNW Members)

[= Recorded by transcriber

- . Which Plans
- . How many %
- . Method of review
- . Other

⁴⁰
11:30 - ⁵⁰12:30 p.m.

LUNCH

3) ⁵⁰12:30 - ¹⁵1:30 p.m.

Prepare for Meeting with NRC Commissioners
(Open)

- 3.1) Report on West Valley Trip (DWM/RKM)
- 3.2) Report on trip to the Center for Nuclear Waste Regulatory Analyses (WJH/CEA)
- 3.3) Discuss ACNW Report on Implementation of EPA Standards (MJS/HJL)
- 3.4) Discuss ACNW Comments on NRC Program on Low-Level Radioactive Waste (DWM/CEA)

1:35 p.m.

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

2:00 - 3:30 p.m.

Meeting with NRC Commissioners (Open)

- 4.1) Discuss topics noted above

3:45 p.m.

Depart for Phillips Bldg. 7920
Norfolk Ave., Bethesda, Md.

5) ⁴⁵4:15 - ²⁰5:15 p.m.

Appointment of ACNW Members (Open/Closed)

- 5.1) Discuss the qualifications of candidates proposed for ACNW Membership (DWM/MFL)

(NOTE: Portions of this session will be closed as necessary to discuss information the release of which would represent a clearly unwarranted invasion of personal privacy.)

6) ⁴5:15 - ^{4:45}6:00 p.m.

Preparation of ACNW Reports to the NRC (Open)

- 6.1) Discuss proposed ACNW reports to the NRC as considered appropriate

^{5:20}
6:00 p.m.

RECESS

Thursday, February 22, 1990, Room P-110, 7920 Norfolk Avenue, Bethesda, Md.

8:30 - 9:45 a.m. Anticipated ACNW Activities (Open)

- 7.1) The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.
(DWM/RKM)

9:45 - 10:00 a.m. BREAK

- 8) 10:00 - ~~11:30~~^{12:10} a.m. Discussion of Topics Regarding ACNW Review of Low-Level Waste Issues with William P. Dornsife (Open)

- 8.1 Mr. Dornsife is Chief, Division of Nuclear Safety, Bureau of Radiation Protection, Dept. of Environmental Protection, Commonwealth of Pennsylvania. Mr. Dornsife chairs the LLW Committee on the Conference of State Radiation Control Program Directors
(DWM/CEA)

~~11:30~~^{12:10} - ~~12:30~~^{1:10} p.m. LUNCH

- 9) ~~12:30~~^{1:10} - ~~2:30~~^{3:25} p.m. Discussion and Possible Comment on the Implementation of a Policy for Criteria for Residual Levels of Radioactivity Following Decommissioning (DWM/HJL)

- 9.1) Discuss NUREG-5512, "Residual Radioactive Contamination from Decommissioning - Technical Bases for Levels to Translating Contamination Levels to Annual Dose - Draft Report for Comment"
(D. Cool and R. Meck)

- 9.2) Interim Release Criteria for Decommissioned Structures and Soils (D. Cool and R. Meck)

~~2:30~~^{3:25} - ~~2:45~~^{3:45} p.m. BREAK

- 10) ~~2:45~~^{3:45} - ~~5:00~~^{4:25} p.m. Preparation of ACNW Reports to the NRC (Open)

- 10.1) Continue discussion of proposed ACNW Reports as needed

~~4:25~~^{4:25} - ~~5:00~~^{5:00} p.m. ADJOURN

APPENDIX I. MEETING ATTENDEES

MEMBERS

Dr. William J. Hinze

Dr. Dade W. Moeller

Dr. Martin J. Steindler

CONSULTANTS

Dr. Donald A. Orth

Dr. Jacob Shapiro

Dr. David Okrent

NRC STAFF AND CONTRACTORS

John Linehan
Philip Justus
Dinesh Gupta
Abe Eiss
B. J. Youngblood
Jim Kennedy
Don Chery
John Trapp
Michael Blackford
Don Loosley
Mysore Nataraja
A. Ibrahim
Keith McConnell
King Stablein
J. Surmeier
R. L. Bangart
S. G. Bilhorn
H. Weber
W. Lah
J. Malaro
Robert Meck
Donald Cool

PUBLIC

Paul Krishna, Battelle
Gene Rosebloom, U.S. Geological Survey
Ken Ayscuiski, Weston
David F. Fenster, Weston
Linda Lehman, State of NV
Chris Dell, Weston
Andy Muir, ICF Tech.
J. Parry, NWTRB
John H. Peck, SAIC, Las Vegas, NV
Stan Echoli, Bishop Cook Purcell & Reynolds
Lynne Fairobent, NUMARC
William Dornsifer, PA DER
Rose Konoveck, SAIC
Alan Nelson, NUMARC
Ron Meyers, Northern States Power Co.
Lew Killpack, United Engineers & Contractors
Jack Russell, EPA
R. S. Daniels, SAIC, Germantown
Hank Bermanis, United Engrs. & Constr.

DOE STAFF AND CONTRACTORS

Jeff Kimball
M. Blanchard/NV.OPS
R. H. Wallace, Jr.
U. S. Clanton/NV.OPS
R. C. Lone, NV.OPS
Edward Regnier
Robert E. Baker, Energetics

GPA/SP

Rosetta Virgilio
C. Maupin

APPENDIX II. FUTURE AGENDA

March 22-23, 1990 (Tentative Agenda)

Low-Level Waste Management by the State of Illinois (Open) - The Committee will be briefed by Mr. Van Vliet, Illinois Department of Nuclear Safety, on the status of low-level waste management in Illinois.

EPA's Proposed Revisions in the Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes (Open) - The Committee will invite representatives from the Environmental Protection Agency, Science Advisory Board (EPA), Nuclear Waste Technical Review Board, the National Academy of Sciences Board on Nuclear Wastes, and the Advisory Committee on Nuclear Facility Safety (DOE), to discuss EPA's proposed revisions in these standards.

International Programs on Radioactive Waste Disposal (Open) - The Committee will meet with representatives of the Office of Governmental and Public Affairs to discuss international programs on radioactive waste disposal.

Appointment of New Members (Closed) - The Committee will discuss the qualifications of candidates proposed for appointment to the ACNW.

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

Working Group Meeting (Date to be announced)

Geological Mapping Studies (Open) - The Committee will be briefed by representatives of either the Bureau of Reclamation or the Corps of Engineers on concerns about the geological mapping for the exploratory shaft emplacement and the proposed changes in the drilling of the exploratory shaft.

April 26-27, 1990 (Tentative Agenda)

Pathfinder Atomic Power Plant Dismantlement (Open) - The Committee will be briefed on the related dismantlement Safety Evaluation Report prepared by the NRC staff.

Technical Position on Stabilization/Waste Forms (Open) - The Committee will be briefed by the NRC staff and will prepare comments on modifications to the Technical Position on LLW Stabilization/Waste Forms.

Yucca Quaternary Regional Hydrology Study Plan (Open) - The Committee will review and comment on the Characterization of the Yucca Quaternary Regional Hydrology Study Plan (Tentative).

"White Paper" on Geophysics (Open) - The Committee will review and comment on the DOE/USGS white paper on integration of the geophysics aspects of the repository SCP.

Results of Waste Confidence Review Group (Open) - The Committee will be briefed on the final review report including the disposition of public comments. ACNW review requested by the NRC staff. Report expected by the end of March 1990.

BEIR V Report (Open) - The Committee will request a briefing on the BEIR V Report, Health Effects of Exposure to Low-Levels of Ionizing Radiation.

Standard Format and Content Regulatory Guide for High-Level Waste Repository License Applications (Open) - The Committee will review and comment on the Regulatory Guide.

NRC Research Program (Open) - The Committee will discuss the NRC research program on radwaste with Dr. Neil E. Todreas, Chairman, NRC's Nuclear Safety Research Review Committee.

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

May 23-25, 1990 (Tentative Agenda)

Technical Position on Seismic Hazards (Open) - The Committee will be briefed by the NRC staff on the draft Technical Position on Methods of Evaluating the Seismic Hazard at a Geological Repository, including the concept of the 10,000 year cumulative slip earthquake. Review requested by the staff. Deferred from

January 1990 meeting.

Technical Position on Soil Erosion (Open) - The Committee will review and comment on the final Technical Position on the Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailing Sites. Technical Position is needed by the end of April 1990.

Design Basis Accident Dose Limit (Open) - The Committee will review the design basis accident dose limit for the HLW repository in the preclosure phase.

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

June 28-29, 1990 (Tentative Agenda)

High-Level Waste Research Program Plan Update (Open) - The Committee will be briefed on the updated draft HLW Research Program Plan. Draft updated plan to be provided in April 1990.

Low-Level Waste Research Program Plan Update (Open) - The Committee will be briefed on the updated draft LLW Research Program Plan. Draft updated plan to be provided in April 1990.

Mixed Wastes (Open) - The Committee will be briefed by the NRC staff on the technical aspects of criteria for the treatment, storage and disposal of mixed radioactive and hazardous wastes.

Status of Proactive Work (Open) - The Committee will be briefed by the NRC staff on the status of proactive work in the Division of HLWM (technical positions and rules) and on NRC programmatic response to changes in the DOE program.

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

APPENDIX III. DOCUMENTS RECEIVED

A. Meeting Handouts from ACNW Staff and Presenters

AGENDA NUMBER	DOCUMENT
2	<ol style="list-style-type: none">1. NRC Staff Review of DOE Study Plans Related to Characterization of the Proposed High-Level Waste Repository Site at Yucca Mountain, Nevada, by King Stablein, HLWM, dated February 21, 1990 (viewgraphs).2. Detailed Technical Review of the Study Plan on the Location and Recency of Faulting Near Prospective Surface Facilities, by Keith McConnell, dated February 21, 1990, (viewgraphs).3. Detailed Technical Review Comments on the Study Plan for Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities (8.3.1.17.4.2), undated.
3	<ol style="list-style-type: none">4. Memorandum for ACNW Members from Major, dated February 15, 1990, regarding New Topic for Meeting with the Commission - Policy Statement on Exemptions from Regulatory Control, with attachments.5. Memorandum for ACNW Members from Abrams, dated November 21, 1989, regarding Proposed Commission Policy Statement on Exemptions from Regulatory Control, with attachments.6. Memorandum for ACNW Members and Staff from Fraley, dated February 16, 1990, regarding Exemptions from Regulatory Control, with attachment [OUO].
7	<ol style="list-style-type: none">7. Update on Future Agenda, dated February 20, 1990.
8	<ol style="list-style-type: none">8. Presentation to USNRC Advisory Committee on Nuclear Waste, dated February 22, 1990, by William P. Dornsife (viewgraphs).
9	<ol style="list-style-type: none">9. Residual Contamination Criteria. Technical Basis Report, undated (viewgraphs).

B. Meeting Notebook Contents Listed by Tab Number

TAB

CONTENTS

- | | |
|---|---|
| 1 | 1. Introductory Statement by ACNW Chairman for February 21, 1990
2. Introductory Statement by ACNW Chairman for February 22, 1990 |
| 2 | 3. Tentative Agenda for the Discussion and Comment on Study Plans Related to the High-Level Waste Repository Site Characterization
4. Status Report on Study Plans Related to High-Level Waste Repository Site Characterization, dated February 21, 1990
5. Draft Review Plan for NRC Staff Review of DOE Study Plans and Procedures, dated December 22, 1987
6. Summary of the NRC/DOE Meeting on the Level of Detail for Site Characterization Plans and Study Plans, undated
7. Portion of transcript and viewgraphs of Staff's presentation on Study Plan review to the 7th ACNW meeting, February 21, 1989
8. Study Plan for Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities, Study Plan 8.3.1.17.4.2, Rev. 0, U.S. Department of Energy, dated May 1989
9. Memorandum for Abrams from Hinze, dated February 4, 1990, re Study Plan for Study 8.3.1.17.4.2
10. List of Site Characterization Study Plans (Table 8.5-2), dated December 1988 |
| 3 | 11. Schedule of Meeting with the Commissioners, dated February 21, 1990
12. West Valley Trip
a. ACNW Letter for Zech, dated January 26, 1989, re West Valley Demonstration Project
b. Memorandum for ACNW Members and Staff from Major, dated November 7, 1989, re Trip Report of Field Trip to the West Valley Demonstration Project, October 26, 1989
c. Executive Summary of January 1989 DOE Project Plan
d. Portion of minutes from the 6th ACNW Meeting, dated January 2324, 1989 |
| | 13. Center for Nuclear Waste Regulatory Analyses |

- a. Memorandum for ACNW Members from Abrams, dated January 24, 1990, re Certified Minutes of the ACNW Working Group Meeting on Center Nuclear Waste Regulatory Analyses - November 30, 1989 - San Antonio, Texas
- b. Draft Summary Report on Visit to Center for Nuclear Waste Regulatory Analyses by Dade Moeller, dated December 1, 1989
- 14. Low-Level Radioactive Waste Program
 - a. Portion of meeting minutes from the 16th ACNW Meeting, undated
 - b. Organization Chart of LLWMD, undated
 - c. ACNW Letter for Carr, dated January 30, 1990, regarding NRC Program on Low-Level Radioactive Wastes
- 15. SECY-89-319, "Implementation of the U.S. Environmental Protection Agency's High-Level Waste Disposal Standards"
 - a. Portion of meeting minutes from the 15th ACNW meeting, dated December 20, 1989
 - b. Memorandum for ACNW Members from Abrams, dated December 11, 1989, regarding Dr. Okrent's Comments on EPA HLW Standards and SECY-89-319, with attachments
 - c. ACNW Letter for Carr, dated December 21, 1989, regarding Comments on Proposed Revisions of EPA's High-Level Waste Standards
 - d. SECY-89-319, dated October 17, 1989
 - e. ACRS Letter for Palladino, dated July 17, 1985, regarding ACRS Comments on EPA Standards for High-Level Radioactive Waste Disposal
 - f. Memorandum for Fraley from Browning, dated September 11, 1985, re NRC Staff Views on Implementation of the EPA HLW Standards
- 7
 - 16. List of Items Proposed for ACNW Review, undated
 - 17. Memorandum for Fraley from Blaha, dated February 2, 1990, regarding Proposed Agenda Items for the ACRS and the ACNW, with attachment
- 8
 - 18. Status Report on the briefing by Dornsife, Chief, Division of Nuclear Safety Commonwealth of Pennsylvania, dated February 22, 1990
- 9
 - 19. Status Report on the Residual Levels of Radioactivity Following Decommissioning, dated February 22, 1990
 - 20. Draft "Interim Release Criteria for Decommissioning Structures and Soils"
 - 21. Memorandum for Taylor from Chilk, dated January 31,

Appendix III
17th ACNW Meeting

4

1990, regarding Staff Requirements - Briefing on NRC
Actions for Cleanup of Contaminated Sites Under NRC
Jurisdiction, 2:00 p.m., Thursday, December 21, 1989

APPENDIX IV

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BRIEFING BY ADVISORY COMMITTEE
ON NUCLEAR WASTE

PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Wednesday, February 21, 1990

The Commission met in open session, pursuant to notice, at 2:00 p.m., Kenneth M. Carr, Chairman, presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission
THOMAS M. ROBERTS, Commissioner
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:**SAMUEL J. CHILK, Secretary****WILLIAM C. PARLER, General Counsel****DADE W. MOELLER, Chairman, ACNW****MARTIN J. STEINDLER, ACNW****WILLIAM J. HINZE, ACNW**

**NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433**

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

2:00 p.m.

CHAIRMAN CARR: Good afternoon, ladies and gentlemen.

The purpose of today's meeting is to hear from members of the Advisory Committee on Nuclear Waste on their activities since we last met in April and July of '89.

Since that time, Doctor Moeller has reported to me on 14 activities undertaken by the Committee. Today's discussion will focus on the implementation of the Environmental Protection Agency's high-level radioactive waste standards, NRC's low-level waste programs and activities, the Commission's policy statement on exemptions from regulatory control, and reports of the Committee's trips to the Department of Energy's West Valley Demonstration Project and the NRC's Center for Nuclear Waste Regulatory Analysis.

Copies of recent ACNW letters related to these topics are available at the entrance to the meeting room.

I'm sure I am joined by my colleagues in expressing regret at the recent resignation of Doctor Clifford Smith from the ACNW. I understand that because of other commitments, Doctor Smith feels he

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 will no longer be able to devote sufficient time to
2 serve as a member of the Committee. The Commission
3 thanks him for his valuable contributions during the
4 time he served.

5 Do my fellow Commissioners have any opening
6 comments?

7 COMMISSIONER ROBERTS: If I can make a
8 suggestion, would it be appropriate for you to
9 memorialize that last statement in writing?

10 CHAIRMAN CARR: Certainly, I'd be happy to
11 do that.

12 COMMISSIONER ROBERTS: I would encourage you
13 to do that.

14 CHAIRMAN CARR: All right. Any other
15 comments?

16 If there are not, Doctor Moeller, please
17 proceed.

18 DOCTOR MOELLER: Thank you, Mr. Chairman.
19 With your concurrence, we would like to report on the
20 two trips as our initial two items and then we'll move
21 ahead --

22 CHAIRMAN CARR: All right.

23 DOCTOR MOELLER: -- into the others.

24 The first of our trips was made to West
25 Valley and this was on October the 26th, 1989. As a

1 result of that meeting, we have gone back and reviewed
2 the letter that we prepared and wrote to you on
3 January the 26th and we believe that the theme or the
4 two major points that were expressed in that letter
5 still apply today.

6 And that is, the first point was that
7 acceptance criteria for the vitrified high-level
8 waste, including the enumeration or specification of
9 testing procedures to indicate conformance with these
10 criteria, need to be defined by DOE. And I might, in
11 the way of additional words, simply say yes, they are
12 moving ahead with that. These need to be identified
13 by DOE for the waste producers and, in turn, once the
14 criteria are identified, they need to be reviewed by
15 the NRC staff to determine if they're acceptable. As
16 I say, we understand that DOE is moving ahead with the
17 specification of the criteria and we believe that's a
18 good sign and it should move forward.

19 Then our second conclusion as a result of
20 that meeting was that public health and safety
21 criteria for the cleaned up facility or the
22 decommissioned facility need to be specified. And
23 indeed, you, of course, are moving forward with the
24 staff to develop such criteria.

25 So, those two items, as I say, still stand

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 and we believe that they are appropriate.

2 In terms of the visit itself, we saw several
3 things that we would like to share with you and we
4 learned several things. First of all, as you know,
5 they are passing the supernatant through ion exchange
6 columns and cleaning it up and then they are going to
7 convert the supernatant into a concrete and that will
8 go to a low-level waste burial facility. And then the
9 ion exchange resins in the sludge at the bottom of the
10 tanks will be vitrified and will become high-level
11 waste.

12 In terms of the removal of the radionuclides
13 from the supernatant, they're doing a very good job on
14 cesium. However, they told us while we were there
15 that the removal of plutonium, which fortunately is in
16 very low concentrations, but at least the resins do
17 not remove the plutonium and they are attempting to
18 improve that portion of the treatment process. They
19 also do not remove the iodine which would be
20 principally iodine 129. So, those -- that was
21 something we learned.

22 We also learned that the low-level waste
23 disposal facilities there do include more than low-
24 level waste. For example, there are three fuel
25 assemblies buried there. There are two snap devices

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 with plutonium 238 in them. There are something like
2 five kilograms of plutonium 239 and then there are the
3 solvents which initially, I understand, were buried in
4 containers but have since leaked out. Some of them
5 have leaked out. And, of course, you've been aware of
6 the fact that they're now digging trenches around a
7 site to try to collect the solvent and prevent it
8 running off.

9 The other item which we noted was that the
10 vitrified waste will still need to be shipped off-site
11 for disposal. And, of course, there is the matter of
12 certification of some type of a shipping cask for
13 those wastes.

14 I believe other than that, that in a summary
15 would be the highlights of our visit.

16 If there are no questions, then we'll go to
17 the next item, which is our visit to the Center for
18 Nuclear Waste Regulatory Analyses and Bill Hinze will
19 be covering that.

20 DOCTOR HINZE: Well, I will attempt to be
21 brief. We have been monitoring the progress of the
22 Center for some time through documents as well as
23 through staff presentations and also the DC
24 representatives of the Center. It was very important
25 for us to go down and to have a direct interface with

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 the group and to talk to the management down there.

2 Basically, our visit was divided into three
3 segments. One, listening to the management, both of
4 the Southwest Research Institute and the Center, and
5 listening to researchers discuss several of their
6 current research projects and what they're gearing up
7 to do. And finally, we looked at the laboratory
8 facilities.

9 In some general overviews of this, it
10 becomes apparent, very apparent that the management,
11 the senior management of the Southwest Research
12 Institute is very much dedicated to serving NRC and to
13 developing a center of excellence in nuclear waste.
14 And they are doing that in terms of not only their
15 managerial skills, but they're putting the
16 infrastructure and apparently the resources of the
17 Southwest Research Institute behind them.

18 It is also apparent that they're very much
19 in a start-up mode. You know that. They are coming
20 on speed in terms of staff and consultants and that's
21 been of concern to us, the quality of both the staff
22 and the consultants. That's proceeding, sometimes
23 from our viewpoint agonizingly slowly, but nonetheless
24 we are impressed with the quality and I think that's
25 the major point to get across is that they are really

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 collecting a fine cadre of core people as well as
2 consultants.

3 As a result of this start-up mode, they are,
4 from our viewpoint, from my viewpoint, looking at it,
5 they are largely involved in developing plans and in
6 the research presentations that were made, except with
7 a few exceptions, they were largely discussions of
8 plans rather than substantive conclusions from those
9 from the research.

10 I think there are a couple of reasons for
11 that. First of all, I think, in my view, the NRC has
12 identified several of the research areas and also I
13 think it's much easier to get started with research
14 rather than to get involved in the technical
15 assistance which is becoming an important element. I
16 think that they are very keen to become involved in
17 the technical assistance and from talking to the NRC
18 staff, that linkage is developing.

19 I really think that I speak for the
20 Committee in stating that they've achieved a great
21 deal. Progress is needed and is coming forth. The
22 thrust from the questioning that we had with them and
23 the discussion that we had, the thrust has to become
24 ever more important in terms of the technical
25 assistance. They have a fine history in terms of

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 material science, performance assessment. They have
2 not had an infrastructure in terms of the geosciences
3 and many of the areas where the technical assistance
4 is needed is in the geoscience area. But that's
5 moving along.

6 My recommendation is that certainly they be
7 encouraged, they be monitored and particularly as they
8 develop their own research projects, because up to
9 this point they've been really been carrying on
10 research projects that have come out of the NRC
11 research staff. They need to -- we need to monitor
12 them as they get into their own research projects, as
13 they prepare reports in a timely fashion, as they
14 interface with the scientific community and as they
15 perform the various technical assistance.

16 I guess that would be my quick summary of
17 it.

18 CHAIRMAN CARR: Any questions?

19 COMMISSIONER ROGERS: Do you think that
20 they'll be able to maintain the expertise which
21 they're building now into the future so that it will
22 be available to support the necessary activities in
23 light of DOE's current schedule?

24 DOCTOR HINZE: Well, that's an excellent
25 question and it's something that we had on our mind

1 when we went down there. What attracts and keeps good
2 scientists and engineers? The senior management, I
3 believe, has the correct attitude in this in that what
4 they're interested in doing is having their people
5 communicate with the rest of the scientific community.
6 In other words, publish papers. This is a very
7 important thing, especially to a younger group. And
8 by and large, their new people are young people and
9 they're really being encouraged to present
10 publications, to publish journal articles. They have
11 excellent laboratory facilities that are coming along,
12 slowly but they're coming along.

13 I think that that's the kind of thing that
14 will help to retain these people because it's very
15 important, this linkage. I think it's very important,
16 this linkage between the research that's being
17 performed and the technical assistance. There has to
18 be this interfacing back and forth. And so there has
19 to be some stability to that research group so that
20 when the time comes for technical assistance, that it
21 will be there and be sharpened to not only the
22 standards in terms of the CFRs and so forth, but also
23 in terms of the science.

24 COMMISSIONER ROGERS: Well, it seems to me
25 one of the very difficult challenges that management

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 there and our management have to deal with in that
2 situation is to be able to define how far the Center
3 can go on new ideas that they generate that come out
4 of the work that they're doing for a very mission-
5 directed project of some sort, that it's important
6 that there be some freedom to explore some of these
7 things and build on the expertise and the new ground
8 that they're breaking just to get the professional
9 benefits that come from having done that. And yet, we
10 know that we can't just let that thing float directly
11 off into the blue either.

12 So, do you think that they and we have--
13 are coming to some way to make those determinations?
14 They're very difficult, I think. I would see this
15 very difficult judgment. Judgments have to be made on
16 how far or how much scope they might have to pursue
17 some of these, particularly younger people who want to
18 go off on them. They get a hold of something new and
19 they really want to pursue it to the end. And to what
20 extent we can allow that and to what extent we have to
21 reign it in is a tough problem to deal with in
22 research management.

23 I wonder what your thoughts are as to how
24 well that's being dealt with or maybe it's not settled
25 yet. It's probably an ongoing, continuing kind of

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 problem that has to be dealt with.

2 DOCTOR HINZE: Well, Commissioner Rogers, in
3 speaking to the young people coming on board privately
4 around cups of coffee and back in the corners of the
5 lab, I really sensed that there was high esprit de
6 corps and an enthusiasm, a euphoria almost about
7 getting on with this and neat kinds of projects.

8 In addition to that, as we are aware, and
9 this was pointed out to us by the management, that a
10 certain proportion of the monies coming in from NRC
11 are put off, and I can't give you that exact number,
12 but there are monies that are set aside for freedom of
13 research and for people to become involved in things
14 that may not fit into the statutes and the licensing
15 problems. And I think that's going to be part and
16 parcel of retaining them.

17 I think that came through to us, Dade, very
18 nicely.

19 COMMISSIONER ROGERS: I think that's very
20 important, but it's, again, how to place the proper
21 bounds on it so that it doesn't get out of hand.
22 It's difficult.

23 DOCTOR HINZE: My own feeling about that was
24 that I -- as we heard the researchers discuss their
25 projects, they always had a preamble in which they

1 tied this to statutes. I think that's very important
2 for the management to be concerned about the statutes,
3 but I think it's the scientist's job to be concerned
4 with the science and for them to be controlled by the
5 management. I think there's, perhaps, a little
6 overemphasis, but that might have been an attempt to
7 show us that they were really mission-oriented.

8 COMMISSIONER ROGERS: What are your thoughts
9 on how we're developing mechanisms for coupling the
10 research results into our necessary efforts? They'll
11 be there, but there has to be some kind of a pathway
12 that's maintained all the time to keep those results
13 flowing to where they have to go and there's a
14 receptivity and an interest in them on the part of
15 those recipients of the research results.

16 DOCTOR HINZE: Well, one of the efforts
17 along that line is for there to be sabbaticals, if you
18 will, of NRC people to the Center. And, as I
19 understand it, also from the Center to the staff.
20 This is the way you can develop those kinds of
21 linkages and that, I think, we will see more of. I
22 think it's something that the Commission should very
23 much encourage.

24 There is also the concern, and I think this
25 has to be constantly monitored and I'm sure it is by

1 the NRC staff, that the research that's going on
2 probably be mission-oriented, but that it have some
3 chance of success in a timely fashion with regard to
4 the problems that the NRC staff is facing. Frankly, I
5 see that as one of the major problems in trying to
6 look ahead and say, "All right, we've got this problem
7 in stoichiastic processes of unsaturated flow through
8 fractures." Okay. Now, that's something that's very
9 germane to Yucca Mountain, and I'm not singling that
10 out because I think there's a problem. But are we
11 going to get answers from them in a timely enough
12 fashion to help with the licensing problem with the
13 study plans and those types of things? I think that
14 the monitoring, and in my statements I use that term
15 "monitoring," I think that's an extremely important
16 thing for that to continue.

17 COMMISSIONER ROGERS: What is your general
18 feeling about the interaction of the NRC staff
19 headquarters with the Center, the modes of
20 interaction, how successful they are, whether there
21 are too many or not enough channels of communication.

22 DOCTOR MOELLER: Well, I can respond. My
23 impression was that it's going along very well. There
24 are interchanges. Of course, the Center has a
25 representative here. We gathered that certainly

1 during the first year or two, the planning, the
2 research planning itself has been a joint effort. So,
3 we saw no problems whatsoever in that area.

4 And back on your question about recruiting
5 and their power or ability to recruit, they are
6 playing up -- those are not the right words, but for
7 the moment they'll portray the meaning, they said they
8 were playing up the fact that this is an NRC center of
9 research excellence and that that has proven to be a
10 very good recruiting tool and that there are many
11 people out there that really see radioactive wastes as
12 a major challenge and they want to make a
13 contribution. So, they're happy to join a team.

14 DOCTOR HINZE: I would say the major problem
15 there perhaps might be in terms of the geosciences,
16 where there hasn't been a long-standing tradition in
17 those areas by the Southwest Research Institute for
18 many years. Twenty, 30 years ago, they were strong in
19 this area, but what happens is the infrastructure
20 disappears, the libraries disappear. As a researcher,
21 you need those things and you don't want to do it
22 through interlibrary loan. So, there has to be some
23 allowances made there.

24 COMMISSIONER ROGERS: Just on the library,
25 how do you feel about that? Do you feel the library

1 resources there are adequate?

2 DOCTOR HINZE: Not in the geosciences, no.

3 COMMISSIONER ROGERS: Not in geoscience?

4 DOCTOR HINZE: No.

5 COMMISSIONER ROGERS: No.

6 DOCTOR HINZE: I asked about that and I
7 didn't see the library but I asked about it. My
8 impression was that that's something that they have to
9 build up on. They also pointed out that there were a
10 number of universities in the area, et cetera. But I
11 know from my own experience, if I have to walk a block
12 to the library, I'm not going to get there very often.

13 COMMISSIONER ROGERS: Presumably, this is a
14 lack of journals--

15 DOCTOR HINZE: Yes, sir.

16 COMMISSIONER ROGERS: -- and extending back.

17 DOCTOR HINZE: Right, right.

18 COMMISSIONER ROGERS: And a rather expensive
19 thing to try to build because you've got to go and try
20 to get all the back issues to maintain the strength
21 that you need.

22 Thank you.

23 COMMISSIONER CURTISS: Let me ask a variant
24 of the question that Commissioner Rogers raised. Did
25 you get the sense when you were down there that even

1 as early as it is in the process of staffing up and
2 getting going that the Center has a clear sense of
3 what it is that we here at the Commission expect of
4 them and when we expect it? Did the -- maybe I'll ask
5 a related question. If you reflected upon what you
6 saw down there, could you identify what you see in
7 your capacity as overseeing the high-level waste
8 program as maybe the three or four most important
9 deliverables in the next three to five years? What
10 would you identify as the critical features down
11 there?

12 DOCTOR HINZE: Well, we can both take a try
13 on that.

14 DOCTOR MOELLER: Sure. Go ahead.

15 DOCTOR HINZE: I think that they have a long
16 tradition in terms of performance assessment. They
17 have extreme interest in that. It's extremely
18 important to all of us. I think they're going to do a
19 good job there. They're doing a good deal in terms of
20 their staffing. That's going to be a positive aspect
21 of it. I think anything dealing with material
22 sciences, again, is something that they're really well
23 locked into. So that's going to be in the positive
24 area, the containers, this type of thing.

25 I think the other aspect is that the senior

1 staff, well, everyone, really understands what it's
2 all about. They understand what is needed. These
3 aren't people that are just off the street. They have
4 good experience in the regulatory process. And so, I
5 think that's on a positive sweep.

6 COMMISSIONER CURTISS: Okay.

7 DOCTOR MOELLER: I think at the beginning,
8 of course, they've been dealing mainly with projects
9 where the staff has a specific need. And so, in that
10 sense, perhaps they don't have -- or certainly
11 initially did not have a overall mission or goal quite
12 yet formulated. I believe though they're rapidly
13 doing that. As I say, we came away with a good
14 feeling, good warm feeling, as they say.

15 COMMISSIONER CURTISS: Okay. One final
16 question. I noticed here from your agenda that you
17 had a chance to talk about the transportation risk
18 study. I don't know how much detail that you got
19 into. I raised that question at earlier meetings and
20 I guess I was curious to hear what your perspective is
21 on activity in that area.

22 DOCTOR HINZE: Well, we had a short
23 presentation on that and they are looking at the
24 present models and they're trying to improve them.
25 One of the things they pointed out to us is that they

1 have found an error with the model and I think that
2 speaks ~~well~~^{well}, augers well for the future. They are--
3 this is another area that they're well organized to
4 start over on and have. That's the one area in which
5 they've really made -- in my view they've made some
6 substantive progress.

7 DOCTOR MOELLER: And, of course, they were
8 doing this because they had the experience and the
9 talents in that area and I agree with Bill, I think
10 they have made some contributions.

11 COMMISSIONER CURTISS: Okay.

12 COMMISSIONER ROGERS: Just one other thought
13 that occurred to me. Part of what they're doing has
14 been to look at all the existing regulations and to
15 look for inconsistencies and what has to be done to
16 satisfy them and to straighten all this out so that we
17 can develop a clear and consistent approach to
18 evaluating a proposal or an application.

19 What is your opinion of how well that's
20 going and do you think that the kind of activity could
21 be brought to bear on some other questions of
22 consistency of NRC regulations, if we thought about
23 doing that, that that would be really a diversionary
24 activity that we ought to stay -- you know, not
25 encourage to take place. It looks like an important

1 kind of thing that could be generally useful for us,
2 but if we try to bring them into or that technology
3 that they're developing or at least the people that
4 are developing it into other areas, it might slow down
5 what they're doing and divert them from their
6 necessary objectives right now.

7 I wonder if you could just comment a little
8 bit about that, any thoughts that you might have on
9 how that activity is going and whether it is
10 establishing a technology that might be transferrable
11 to other things that we have to --

12 DOCTOR MOELLER: I think indeed it is a
13 technology that could be transferable. We are
14 somewhat -- we do not have the background information
15 really that we need because we have not seen the
16 report. We have received information that it's
17 underway and we certainly have, in a sense, concurred
18 that it looks like a good thing to do. And certainly,
19 looking at the regulatory -- the thoroughness or the
20 details of the regulations to me seems and to us seems
21 a wise move. So, that's about all I could say at the
22 moment.

23 DOCTOR HINZE: On the positive side of that
24 ledger as well is the fact that they are becoming very
25 familiar with the whole statutes problem.

1 COMMISSIONER CURTISS: Probably more so than
2 us.

3 DOCTOR HINZE: Yes, indeed. And I think
4 that that will be a real positive payoff in the future
5 and I think that -- so that kind of program is
6 something that indeed if they come through as well as
7 we hope they will on this, that they should be
8 encouraged to do in other areas and transfer that
9 technology, that kind of approach to other areas.

10 CHAIRMAN CARR: So I read you as saying
11 except in the area of geosciences, their technical
12 expertise is probably up to par?

13 DOCTOR HINZE: I don't want to say that and
14 if I said that, I didn't mean to say that. What I'm
15 saying is that they had the farthest to go and those
16 are areas in which we are particularly interested in
17 right now because of the Yucca Mountain problem, the
18 SCP, the SEA, the study plans, the technical
19 positions, the rulemaking. I didn't mean to put down
20 their geoscientists because I think that they've got
21 some real movers, especially in the younger group.
22 I'm not eliminating the older group because some of us
23 fall in that. But what I am saying is that they've
24 got some real whip-snappers in terms of the very
25 talented researchers in that younger group. So, let's

1 give them a chance. They've got to get -- their
2 staffing needs beefing up and it's planned, it's in
3 the program.

4 COMMISSIONER ROGERS: I take it then it's
5 really a question of quantity not quality.

6 DOCTOR HINZE: At this time, yes.

7 COMMISSIONER ROGERS: Numbers of people
8 rather than -- the individuals, you feel, are of high
9 quality that they've added?

10 DOCTOR MOELLER: Yes. Yes.

11 COMMISSIONER ROGERS: Including the
12 consulting?

13 DOCTOR HINZE: That is right.

14 COMMISSIONER ROGERS: But it's a question of
15 coverage and depth.

16 DOCTOR HINZE: They've just been very busy
17 and they're taking time, and you can't fault that
18 really, in terms of putting people on board and
19 including consultants because that's a bad trip if you
20 make the wrong maneuver.

21 CHAIRMAN CARR: Well, it looks like DOE is
22 waiting for them, so it will be all right.

23 COMMISSIONER ROGERS: Oh, that's what it is.

24 CHAIRMAN CARR: Let's proceed.

25 DOCTOR MOELLER: The next item is the

1 implementation of the EPA high-level waste standards
2 and Martin Steindler will take the lead on that topic.

3 DOCTOR STEINDLER: I start this topic with
4 some trepidation. As you know, we're supposedly a
5 collegial group, but my election to this particular
6 assignment was more unilateral than I would ordinarily
7 tolerate.

8 COMMISSIONER ROBERTS: And you were not a
9 participant.

10 DOCTOR STEINDLER: You have it precisely
11 correct. But let me make a couple of introductory
12 comments. This is a moderately complex topic, as you
13 well know. From our vantage point, it's complex
14 because the topic is fuzzy. It's fuzzy both
15 technically and semantically. Furthermore, it is
16 complicated because it involves essentially all
17 aspects -- in the case of a high-level repository, all
18 aspects of the repository program.

19 The discussions that we have had now for
20 pushing seven plus years on the EPA standard has
21 tended toward a discussion of the negative, namely can
22 or can it not be demonstrated that you've met the
23 criterion.

24 Having said all that, then let me, if you
25 bear with me, walk you through where I think we are

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 and how we got there. Let me read to you briefly what
2 we, the Committee, has said. In a letter to you of
3 December 21st, we have said, in part, that we continue
4 to doubt that compliance with the EPA standard can be
5 demonstrated for a specific repository site. What we
6 have not said is that the compliance with the standard
7 cannot be demonstrated and there is a significant
8 distinction that I want to continue to make.

9 Let me take you back to 1985. In 1985, the
10 ACRS wrote a letter to the Chairman in October which
11 said, in part, "In our opinion, the establishment of
12 overly restrictive standards relieved by leniency in
13 their implementation is not an appropriate approach.
14 The proper approach would have been to develop
15 reasonable standards that could have been more
16 definitively enforced."

17 Those, I think, are two specific quotations
18 that I will come back to in a few minutes. Then let
19 me back up a little further and involve you in a
20 little history. In 1983, the Commission commented on
21 what was then before them as a draft version of the
22 EPA standard and said, in part, that they would
23 require -- the implementation of these standards would
24 require a degree of precision unlikely to be
25 achievable in evaluating real waste disposal systems

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 and they said a number of other things.

2 Fire that note back to EPA and EPA looked at
3 the comments and added a qualifying paragraph in the
4 standards, in 40 CFR 191. The paragraph effectively
5 said something about reasonable expectations, proof is
6 not to be had in what they called the normal sense of
7 the word. We've gone through all this. And having
8 then seen these revisions and responses to what the
9 EPA perceived to be the NRC's objections, the NRC
10 withdrew its objections. The standards were then
11 issued.

12 The court subsequently remanded for another
13 look, as you well know. It did not address the issue
14 of standards or their implementation or the proof that
15 they can be met. It dealt with a totally different
16 subject, but it allowed us an opportunity, allowed all
17 of us an opportunity to visit the subject again.

18 Let me add that in the course of these
19 discussions, even internal to the EPA, their own
20 science board has said that the standards are overly
21 restrictive and it's not at all obvious that it can be
22 demonstrated that you can meet them.

23 Let me shift the scene slightly. Let me
24 tell you what the standards are and I realize I may be
25 plowing ground that you have well memorized, but there

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 are fundamentally three subsections to 191.13. One
2 says, in two parts, that the likelihood of meeting--
3 of exceeding what they call table 1, which is simply a
4 listing of nuclides to be allowed to be released in
5 curies over 10,000 years, the likelihood is one in ten
6 that you exceed the table value and the likelihood is
7 to be less than one in a thousand to exceed ten times
8 the table value. The difference between the two is
9 obviously non-linear and I can comment on that also.

10 The second section is the one that they
11 added on behest of the Commission's initial comments
12 and that deals fundamentally with the reasonable
13 expectations issue of how you demonstrate compliance.
14 But they've added a third in the draft that we have
15 and the third, in effect, escalates the time schedule
16 over which this whole issue to be addressed to 100,000
17 years. That is a new and as yet unspecified change.

18 Okay. Then what are, in fact, the issues
19 that we based our commentary on? Well, the staff in
20 SECY-89-319, which is the fundamental document against
21 which we viewed the issue and against which we viewed
22 the issue initially, said on their own -- in fact, let
23 me see whether I can find the appropriate quote which
24 I thought, at least we thought was important. In that
25 SECY document they state that, "Therefore, a rigorous

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 application of the EPA standard would lead to the
2 conclusion that the standards cannot be implemented in
3 a licensing review." We looked at that and said that
4 fundamentally agrees with our view and went on.

5 The DOE folks who came and talked to us when
6 we discussed this issue in one of our meetings in
7 effect said the same thing.

8 The EPA Science Advisory Board, much
9 earlier, challenged the probablistic methodology and
10 said that compliance needs to be demonstrated in order
11 to be able to make the system work. They also pointed
12 out, of course, that the standards -- they thought
13 that the standards were a little too severe. And
14 after all of that was said and done, the consultants
15 that we had at our meetings pretty much agreed to that
16 same general view.

17 That's the background. So then, what are
18 the issues? The issues are, if we can boil them down
19 and be a little more simplistic than necessary
20 perhaps, that, one, the standards may be too strict
21 and they have included in here essentially a risk
22 avoidance issue which the Commission, and certainly
23 through its ACRS advice, have avoided studiously.

24 The proof that we have heard, or at least a
25 demonstration or the indication that the methodology

1 is available to demonstrate compliance with 40 CFR 191
2 was not evident in all the discussions that we've had.
3 We've had a great deal of comment and talk about how
4 this is done, but all of those discussions were at
5 best generic and hardly specific enough to convince us
6 that compliance can be demonstrated.

7 The rulemaking, which was alluded to in some
8 of our discussions, involving perhaps as many as three
9 separate issues, has been announced by the staff as
10 rectifying some of the problems that we thought we saw
11 in the issue of compliance with the standards. But we
12 have neither information on nor any reasonable
13 assurance, if you'll allow me that terrible pun, that
14 the rulemaking process will result in a product which
15 will solve the issue at hand. Namely, how do you go
16 about certifying or qualifying that you've met the EPA
17 standard? So, the rulemaking issue has been too fuzzy
18 at this point for us to be able to get our hands on.

19 The extension to 100,000 years tends to be
20 bypassed in most of the discussion that troubles some
21 of us greatly because it makes the uncertainties in
22 the data that could possibly be used for probabilistic
23 analyses even more uncertain than the 10,000 year
24 period might.

25 It is a given for us, and it may not be for

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 others, but it seems to be a given for us that you
2 would like to resolve the issue of the EPA standard
3 now while they're still talking about doing something
4 about it rather than finding out two, three years from
5 now that your estimates of how easy it is to
6 demonstrate compliance were wrong and now the staff
7 would come back to the Commissioners and say, "Please,
8 go talk to the EPA because this thing isn't going to
9 work."

10 All of those together then lead us back to
11 the original commentary that we continue to doubt that
12 compliance with the EPA standards can be demonstrated
13 for a specific repository site. That's my rough
14 summary of where we are and substantially how we got
15 to the conclusion that we lay down.

16 I'd be happy to --

17 CHAIRMAN CARR: Questions?

18 DOCTOR STEINDLER: I'll be willing to try to
19 answer questions.

20 COMMISSIONER ROBERTS: Well, and I'm reading
21 from the letter you keep referring to. "To resolve
22 these issues, we recommend that the NRC be more
23 aggressive in dealing with EPA." I would certainly
24 agree with that.

25 DOCTOR STEINDLER: I recognize I extracted

1 out of --

2 COMMISSIONER ROBERTS: I understand. I
3 understand.

4 That's all I have.

5 CHAIRMAN CARR: Commissioner Rogers?

6 COMMISSIONER ROGERS: Well, it does seem to
7 me there is an issue there on that though that -- in
8 that letter and that same paragraph. I can't quote
9 it, but it seems to me that you had two things that
10 you were suggesting that NRC should be more aggressive
11 on. One had to do really with the scientific base on
12 the standards and the other had to do with essentially
13 their workability or utility where they could actually
14 be used. And I'm a little troubled with your
15 suggestion that we take a very aggressive view on the
16 scientific basis because it seems that that is the
17 domain of EPA and that's what they're supposed to do.
18 If they're not workable from our point of view, that's
19 a separate issue and I readily see us being very
20 aggressive on that, but I'm a little concerned about
21 your suggestion that we ought to tell them how to do
22 the science.

23 I'd like some comments of others on this
24 because it seems to me that you lump the two together
25 in your suggestion of where we should be aggressive

1 and I would think that maybe we ought to separate
2 those two aspects and look at them separately because
3 if we can't use the standards, then that's really an
4 issue that just has to be thrashed out, it seems to
5 me.

6 On the other hand, the scientific basis is
7 really -- while we might have some questions or doubts
8 about it, is really their domain and their territory
9 and I'm just wondering whether it is appropriate for
10 us to get into that.

11 DOCTOR STEINDLER: Well, I would be, I hope,
12 the last to try and point out to you what is your
13 domain and what is not. Let me suggest to you,
14 however, that the two that you intend to separate are
15 not really so easily separable.

16 If, in fact, the technical basis for the EPA
17 standard is either unrealistic or inconsistent and we
18 can make some arguments on probably both of those,
19 although now we get into the very fuzzy qualitative
20 area, that certainly impinges on the ability of the
21 staff to evaluate and certify that whatever the
22 applicant brings in is some match to those standards.
23 In that sense, the separation of doability and the
24 actual values, if you will, I think are very difficult
25 to separate.

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 I wouldn't want the Commission to make too
2 much of our use of the word "aggressive," and perhaps
3 that was overly aggressive. I guess what we're saying
4 is that this is an opportunity which passed us by once
5 and but for the voice of the court for a totally
6 separate issue allows us at least one more look. In
7 that context, we would say this is an excellent
8 opportunity to do that.

9 COMMISSIONER ROGERS: Well, it would
10 certainly seem it is the right time to try to have a
11 very vigorous dialogue.

12 DOCTOR STEINDLER: Yes. Right. Well, I
13 think that's in part what's required. It is difficult
14 for us to recommend such obviously correct solutions
15 that they become patently acceptable to everyone. If
16 so they would have been done a long time ago. But we
17 have heard a lot of voices for folks that have studied
18 this issue, who kept saying to us, "There's a problem
19 here. They're too stiff. It's not obvious how you do
20 this."

21 The responses to those challenges, it seems
22 to me, would be to address them directly. If it is
23 obvious to somebody on how to define the meaning of
24 the EPA criteria, then I would suggest that that may
25 be some exercise that ought to be done. The exercises

1 that have been done that I've read have been
2 sufficiently generic as to probably be useless.
3 They're certainly a good first shot.

4 The argument has been that DOE will have to,
5 in the course of their WIPP, exercise, if that's the
6 right term, go through a similar sort of process. I
7 think it is not at all clear -- and the Hearing
8 Committee has pointed this out -- it is not at all
9 clear that as it stands that is a readily doable
10 activity.

11 All of those things together, it seems to
12 me, run up sufficient flags for the Commission that we
13 ought to really have a hard look, and now is the time
14 to do that. That's really all we're saying.

15 CHAIRMAN CARR: Commissioner Curtiss?

16 COMMISSIONER CURTISS: Well, yes. I think
17 you covered a lot of ground here, and I guess I'm not
18 quite sure where to start, particularly when I
19 expected Commissioner Rogers to have more questions.
20 But let me pick up on the point that he's raised about
21 the stringency of the standard, because I guess I do
22 have a slightly -- maybe not a slightly, but a
23 different view about our obligation, and that is that
24 where we, in our joint responsibilities with EPA,
25 share a task of carrying out programs in various

1 areas, whether it's mill tailings or the Clean Air Act
2 or the Nuclear Waste Policy Act or low-level or high-
3 level, what have you, it does seem to me that issues
4 like this are fair game for consideration and
5 discussion, not just by us but by others, including
6 DOE, which has raised the issue recently.

7 So I guess I like your use of the word
8 "aggressive." It does seem to me that that
9 characterizes the kind of sentiment that we ought to
10 bring to bear if for some reason we think the
11 underlying science here is inadequate, first.

12 Secondly, we do have a problem here that it
13 seems to me leads us to the conclusion that we have to
14 at least understand and agree with the EPA standard.
15 The problem is one that I think you've touched on
16 before, and that's the business of applying
17 conservatism on top of conservatism, margin on top of
18 margin. So if, in fact, the EPA standard reflects a
19 certain degree of margin or conservatism, and I want
20 to get back to that question in a minute, it's
21 important for us to know what that is, so that as we
22 go forward with the implementation of our
23 requirements, whether it be on ground water travel
24 time or package container performance or what have
25 you, that we have a feeling as to how much additional

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 conservatism, if any, ought to be heaped onto the
2 initial EPA standard, which in turn reflects the
3 health and safety standard that we're charged with
4 implementing.

5 Let me get back to the question of the
6 stringency of the standard, because I've heard the
7 discussion before and I think you've accurately
8 characterized what folks have said to date, including
9 the SAB and the Commission and others. But let me ask
10 you the question. As you reached the conclusion that
11 you think the EPA standard, focusing on the science
12 first, is overly conservative, too stringent, I wonder
13 if you'd expand upon your basis for reaching that
14 conclusion. What is it that you're communicating to
15 us, the views of others that have expressed that
16 conclusion or your assessment that that is the case?
17 And if so, why?

18 DOCTOR STEINDLER: I pause for a number of
19 good reasons. The issue of what is a societally
20 acceptable bottom level standard is raised in the
21 context of not only the Commission, but every other
22 activity that's regulated. And the answer you come to
23 depends very much on who the commissioners are and
24 which organization you're talking to. As a
25 consequence, I don't see a basis for saying clearly

1 and numerically that a one millirem per year for
2 10,000 years for the most exposed individual is too
3 high or too low.

4 All I think we can do is address the issue
5 in the context of where society will accept risk, and
6 what kind of unavoidable issues do we face every day.
7 None of the discussion, no matter how couched, turns
8 out to be quantitative. The background in this
9 country is 100 millirem. If you listen to the folks
10 who worry about radon, it's significantly higher. The
11 EPA standard for drinking water is four millirem. I
12 think I have the numbers right. If I don't, forgive
13 me. I can probably find it. The operational annual
14 doses are 25 millirem.

15 The EPA standard at the moment specifies
16 1,000 extra deaths, cancer-related deaths in 10,000
17 years. If you want to assume a million population at
18 any point in time, that gets you to one millirem. We
19 will, I assume, discuss the issue of what we used to
20 call "below regulatory concern," which is now called
21 something slightly different, which has values derived
22 from the international viewpoint that vary
23 considerably from our initial values.

24 All I can do is, in a sense, wave my hands
25 at you -- and, you know, I want to admit that I'm

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 waving my hands at you -- and say that somebody is
2 calling for a release of 1,000 curies over a 10,000
3 year time period with a dose that is not very clearly
4 definable to an undefined population over a 10,000
5 year time period seems to us to be not only obviously
6 unmeasurable, but at variance with the rest of the
7 kind of standards that have been put together.

8 Does that answer the question why is it--
9 why do we think it's too strict? No. We can probably
10 develop a comparative case. Of course, so could the
11 staff, probably has already done that and laid it
12 before you. And there may well be more apropos
13 numerical values that one could probably dig up.

14 But the 10,000 year time period probably is
15 the central focus for the concern that this is an
16 excessively strict standard. But let me defer to
17 Dade, who has spent more time than I have in the
18 concern about backgrounds and standards that are
19 applicable to the population at large.

20 Probably you have comments on that, Dade.

21 DOCTOR MOELLER: About the only comment I
22 would have is in terms of the stringency. I keep
23 going back to the safety goals of the NRC for nuclear
24 power plants, and you give a qualitative goal which is
25 a broad statement of what you want to achieve, and

1 then you gradually quantify that and go into more and
2 more detail as you go to the lower levels.

3 Well the qualitative goal, as I recall, that
4 EPA originally stated was that the waste in a
5 repository would carry with it no more risk than the
6 unmined ore. Well, if I go out to the Colorado
7 plateau and walk around on unmined uranium, I know
8 it's 100 millirem a year, at least, terrestrial dose
9 rate. And because those ores are located at higher
10 altitudes, it's a higher cosmic dose. Well then, they
11 go from that to coming down lower and lower and they
12 just get more and more stringent.

13 Now I'm not saying it should be 100 millirem
14 a year. I don't think we want that. But I'm not sure
15 that it should be one millirem either.

16 COMMISSIONER CURTISS: Let me follow-up on a
17 couple of points. I take it you talked about the
18 extension of the proposed rule or the draft proposed
19 rule out to 100,000 years. I take it, in view of your
20 assessment of the conservatism inherent in the 10,000,
21 that that looking over the cliff, as people have
22 described it, to see if there are events in that
23 90,000 year period that might be worth taking note of,
24 in your judgement, I take it, is wholly unnecessary,
25 given the conservatism already present.

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 DOCTOR STEINDLER: That's certainly correct.

2 COMMISSIONER CURTISS: Let me pursue this
3 question --

4 DOCTOR STEINDLER: Not only -- excuse me.
5 Not only, perhaps, unnecessary, but probably not
6 doable.

7 COMMISSIONER CURTISS: Let me pursue that
8 question of stringency from a different perspective in
9 focusing on the margin on top of margin question
10 that's come up. If we were faced with implementation
11 of the EPA standard, overly conservative as it might
12 be, and focusing on the requirements that we at the
13 Commission in turn have established to implement that
14 standard, if you stipulate for the sake of discussion
15 that you've accomplished all the conservatism
16 necessary and can afford to be realistic in the
17 implementation of that standard, are there instances
18 that in your judgement in the context of the way we're
19 implementing that standard in our regulations and in
20 particular in the application of a subsystem
21 performance criteria that you think have contributed
22 to the unnecessary margin on top of margin problem?
23 Or haven't we looked at that yet?

24 DOCTOR STEINDLER: I'm not sure we've looked
25 at it quite that way, but let me give you a small

1 sidelight which you also probably already know. If
2 you accept that the release rate from a waste
3 repository is one part in 10^5 starting in year 1000
4 and going on to year 10,000, and you address the
5 question of how much in the way of actinides is likely
6 to be buried in spent fuel and you apply that number,
7 you'll find that you can generate a sufficiently large
8 release of actinides that you can't meet the EPA
9 criteria. So it's a question of where do these
10 criteria actually interface. I think that arithmetic
11 is right. If you hold me to it, I'll have to go back
12 and do it again, but that's certainly been published
13 in a DOE report as a concern that they need to worry
14 about on how to handle.

15 I don't know whether we have enough
16 information -- or, let me put it differently. I don't
17 know whether I have enough information right before me
18 to determine whether the 1,000 year travel time, the
19 one part in 10^5 , represent a conservatism above and
20 beyond what might be necessary if there was some
21 rigorous way to determine adherence to the EPA
22 criteria. My suspicions are that that's probably
23 correct, but I certainly can't demonstrate that now.

24 COMMISSIONER CURTISS: The one sentence in
25 your letter on this subject that caught my eye was the

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 one that reads as follows:

2 "The NRC subsystem performance criteria have
3 the potential for imposing even more stringent
4 requirements on the repository."

5 I take it you mean by that, A, more
6 stringent than the EPA standards would require if you
7 just applied the EPA standards.

8 And B, do I read that correctly to imply a
9 critical conclusion there, that they shouldn't result
10 in more stringent requirements?

11 DOCTOR STEINDLER: Oh, I think that's
12 correct. They should not. Whether or not they're
13 that closely related to EPA criteria, I'm not sure
14 that that's what we would have advised you to read
15 into that note. For right now, I must say my mind is
16 a blank for reasons that I will not admit to.

17 DOCTOR MOELLER: Rather, I think what we're
18 saying is by specifying limits on individual
19 subsystems you are adding to the stringency of the
20 standards. Now in subsequent discussions, of course,
21 with the NRC staff, we've been told that those
22 subsystem criteria are -- you know, that the 1,000
23 year travel time is not an absolute. But yes, it
24 seems to us to be adding stringency to the standards.

25 I think those subsystem criteria need to be

1 very carefully worded, and perhaps they are, to
2 clearly specify that they are simply subsystem guides
3 and that they're very flexible in their -- in how they
4 can be interpreted.

5 COMMISSIONER CURTISS: Let me turn to one
6 final subject and ask the question of the ability to
7 demonstrate compliance with the EPA standard. Your
8 initial comment, I guess, confused me, that you -- in
9 saying that you doubt that compliance with the EPA
10 standards can be demonstrated, you don't intend to say
11 that you doubt that it cannot be demonstrated? I
12 guess I'm confused by --

13 DOCTOR STEINDLER: That's correct. We have
14 not said that compliance with these EPA criteria as
15 they currently stand cannot be demonstrated. All we
16 have said was that we have not seen any information
17 that leads us to believe that they can be.

18 Now the staff has said repeatedly that, yes,
19 they think that compliance can be demonstrated. But
20 we are just not convinced on the basis of the staff's
21 comments.

22 COMMISSIONER CURTISS: You've seen the SECY
23 paper that discusses the subject?

24 DOCTOR STEINDLER: Yes.

25 COMMISSIONER CURTISS: You referred to it,

1 had an opportunity to read it. Staff proposes an
2 approach there ^hwere they clarify that question and
3 with the purpose of providing further amplification to
4 the '83 language on just how you go about doing that.
5 Would that do the job?

6 DOCTOR STEINDLER: We don't know. That's
7 precisely our problem. We've looked at the commentary
8 that we've gotten from time to time on those three
9 potential rulemakings -- there may be more -- and they
10 have been not substantive enough to tell us that, yes,
11 that's going to do the job.

12 And then I have to add, if that is in fact
13 left open and the EPA criteria are set in concrete, to
14 go back and then change it, if those rulemaking
15 operations do not meet the test of quality, I think
16 would be very difficult for the Commission. That's a
17 judgement which I really shouldn't make, since it's a
18 Commission judgement.

19 COMMISSIONER CURTISS: Let me jump back to
20 the discussion of the Center. Is there anything that
21 you saw down there on performance assessment that
22 would suggest that they've found the Holy Grail here
23 and are on their way to defining a methodology that
24 would ease the problem that's been identified?

25 DOCTOR HINZE: Well, they had almost, I

1 guess, the day we were there, the new chief of their
2 performance assessment group had reported, a person
3 they had hired, and this was a well-qualified
4 individual from Pacific Northwest Laboratories. So
5 they certainly have been able to recruit a very good
6 person, so I hope they'll move ahead.

7 COMMISSIONER CURTISS: Well, I don't have
8 any other questions. I guess this has been a baffling
9 subject for me. It's not one that's just been
10 recently raised. The ACRS has been raising it. The
11 SAB has been raising it, the Science Advisory Board,
12 and the Commission's talked about it for a number of
13 years.

14 We now have somewhat of a hiatus in the
15 program, because of the delays that have been
16 announced together with the remand of the rule, that
17 it seemed to me to provide the opportunity for us to
18 try to get our arms around whatever uncertainties,
19 inconsistencies, stringencies unnecessarily, and so
20 forth might exist and try to wrestle them down if
21 there's anything we want to do about them.

22 DOCTOR MOELLER: Oh, it's a key ingredient.
23 I mean, the conduct or the -- I guess, the conduct of
24 performance assessments can tell you a lot about where
25 the voids are, ^hwere the uncertainties are, where you

1 need data, et cetera. So we, as a committee, have on
2 numerous occasions encouraged the staff, you know, to
3 give top priority to performance assessment.

4 COMMISSIONER CURTISS: That's all I have.

5 CHAIRMAN CARR: Well, at the risk of being a
6 something or other --

7 COMMISSIONER ROGERS: Can't avoid it.

8 CHAIRMAN CARR: -- I think your letter
9 hasn't been very helpful. You're telling us that
10 you're not sure it can be and you're not sure it can't
11 be, and technically that doesn't do me any good.

12 Are you trying to tell me that -- I don't
13 mind being aggressive with EPA, if I know what to take
14 over and lay on the table. Are you telling me I ought
15 to go back to EPA and tell them to draw up new
16 standards?

17 DOCTOR STEINDLER: Well, that would
18 certainly be a step in the right direction, if those
19 new standards don't multiply the problems of the old.
20 If they're going to give you long-term highly
21 uncertain probablistic requirements, which have -- let
22 me go back a notch.

23 I understand -- and Dade could handle that
24 better than I could -- but the use of PRAs for
25 reactors is a class activity, not a single plant

1 activity. And here, these folks are saying to you not
2 only do you look at the PRA for a reactor where
3 experience is now substantial -- lifetimes of reactors
4 are modest, trivial in comparison -- but here this is
5 a single unit that's going to have to sit there and be
6 predicted for 10,000 years. If that's what you're
7 going to get back once you tell them to go do it
8 again, then it's true we haven't made much progress.

9 CHAIRMAN CARR: Well, I'd feel more
10 comfortable if I knew what to go back and tell them to
11 change. Do I want to tell them to change the years?
12 Do I want to tell them to change the numbers?

13 DOCTOR STEINDLER: I think the concern, the
14 central concern --

15 CHAIRMAN CARR: You're my technical experts.
16 I want you to tell me what to tell them.

17 DOCTOR STEINDLER: All right. Well --

18 COMMISSIONER CURTISS: I take it you
19 wouldn't -- you'd tell them don't worsen the problem
20 by going to 100,000 years.

21 DOCTOR STEINDLER: That's the first thing I
22 might tell them.

23 COMMISSIONER CURTISS: That might be one
24 thing that we --

25 CHAIRMAN CARR: Well, is it better to tell

1 them to go to 5,000 years?

2 DOCTOR STEINDLER: No, I don't think so.

3 CHAIRMAN CARR: I don't either.

4 DOCTOR STEINDLER: I think the central issue
5 that at least I see is the probablistic aspect of the
6 regulation -- or the standard. If we're to be
7 deterministic, theyⁿ I think the chances of you being
8 able to demonstrate that you can meet it goes up
9 sharply.

10 CHAIRMAN CARR: What standard should I have
11 if I do that?

12 DOCTOR STEINDLER: Let me defer that, and
13 perhaps the thing for us to do is to look at the
14 subject fairly carefully and then write you a letter.

15 CHAIRMAN CARR: Yes. I need -- you know, I
16 need something I can get my teeth into.

17 DOCTOR STEINDLER: That's fair enough.

18 CHAIRMAN CARR: It's not going to do EPA any
19 good for me to go tell them, "Hey, that thing, I don't
20 think I can work with it."

21 DOCTOR STEINDLER: Yes.

22 COMMISSIONER CURTISS: Let me suggest a
23 concept. And I've got the same frustration that I
24 think the Chairman has as we hear these presentations.

25 CHAIRMAN CARR: Did I sound frustrated?

1 COMMISSIONER CURTISS: A little bit, and
2 more so than I did, but let me suggest a thought that
3 as you look at how to proceed you might evaluate.

4 It does seem to me that given the division
5 of responsibility between the two agencies where EPA
6 promulgates the general standard on protecting the
7 public health and safety, a generally applicable
8 environmental standard that we in turn are charged
9 with implementing in our regulations, we understood
10 that division of responsibility in other contexts, in
11 particularly mill tailings and low-level wastes and
12 other areas where they have proposed or have
13 established that kind of standard, to mean that if you
14 meet the NRC regulation, if you put ten feet of cover
15 on the mill tailings pile, you have thereby met the
16 EPA general standard of 20 picocuries per liter. And
17 that's a relationship that I always understood to be
18 inherent in the division of the responsibilities
19 between the two agencies that left us the task of
20 implementing the standard that EPA had established.

21 Now at the last meeting where we talked
22 about this issue with the staff, it wasn't clear to me
23 that that conclusion -- in fact, it was clear to me
24 that that conclusion could not be reached here when I
25 asked the staff, "If you meet the NRC standard, do you

1 meet the EPA standard?" The answer is no, not
2 necessarily, and vice versa.

3 I guess I wonder if it's not possible, as
4 you look at this subject, to approach the issue in
5 that context. And recognizing that the probablistic
6 nature of the standard is probably here to stay. We
7 hope it doesn't get worse if the standard is looking
8 towards 100,000 years. But recognizing that it's
9 probably inherent in what we're going to have to deal
10 with, I've asked the staff this question and I'll pose
11 it to you.

12 Is there a means or an approach where we can
13 establish the implementing requirements, either using
14 the subsystem performance criteria or some variant on
15 that that when we analyze compliance with those
16 requirements, we can, at the end of that process,
17 conclude that the EPA standard is thereby met, as we
18 do for mill tailings and as we do for other areas
19 where we have standards like this.

20 It seems to me that if we're troubled by the
21 probablistic nature of the standard, if the basic
22 approach that the Commission has pursued in its Part
23 60.113 is deterministic, and if we can reach the
24 conclusion that compliance with the deterministic
25 framework is, as a matter of fact, compliance with the

1 EPA standard, that might solve a couple of our
2 problems, one of which is litigating the probablistic
3 nature of the questions that the EPA standard entails,
4 which I think will be very difficult in a litigative
5 context, and other technical questions before you
6 could get to the hearing.

7 But I would encourage you, as you look at
8 ways to try to come to grips with this issue, to see
9 if that -- what I'll call, I guess, the conventional
10 approach to the division responsibilities might not be
11 something that fits here and, if necessary, with some
12 adjustment of what we've got in our current regulatory
13 framework.

14 DOCTOR STEINDLER: Why don't we look at that
15 and get back to you.

16 CHAIRMAN CARR: Let me ask you another
17 question. Do you think our information base is
18 sufficiently improved now that we can achieve a
19 consensus on a revised standard? Are we smarter now
20 than we were when this standard was agreed to?

21 DOCTOR STEINDLER: I don't want to be in the
22 position of saying we're not. The issue, I think,
23 however, is are we smart enough. If -- and there, I
24 think, my view is that we're not. We're not smart
25 enough and the reason I say that is because the

1 documents that we've read, things that we have heard
2 where people have tried to assess the process whereby
3 they would try and show compliance with the standard
4 have tended to be quite fuzzy.

5 Now, part of that is the problem of coming
6 to grips with a real repository where they're not
7 really able to dig significant holes at this point in
8 time and therefore establish the issues.

9 CHAIRMAN CARR: Well, my concern is if we're
10 no better able to write a good standard now, shouldn't
11 we wait until we get some more data and then write the
12 standard?

13 DOCTOR STEINDLER: The EPA, of course, would
14 view that to be their responsibility and ^{not} ~~new~~ ours.

15 COMMISSIONER CURTISS: Well, the standard
16 also drives the data collection, doesn't it?

17 DOCTOR STEINDLER: Yes, certainly.

18 COMMISSIONER CURTISS: What you do in the
19 site characterization process is dictated in part by
20 what the standard is. So, it's a catch 22
21 potentially. Maybe not a catch 22. Maybe it augers
22 in favor of addressing the problems with the standard
23 early for that very reason, ^h sort of the data
24 gathering.

25 We were at a recent trip that Commissioner

1 Rogers and I took to Lawrence Livermore. The case was
2 made that the carbon 14 issue is driving a lot of what
3 DOE is doing right now. I don't know what that means
4 in terms of their actual characterization, but the
5 carbon 14 issue is driving it because that's what the
6 standard requires. They, in turn, are going to
7 dictate what the characterization program looks like.

8 CHAIRMAN CARR: Have you all considered a
9 joint meeting with DOE's technical review board to
10 address this problem, since I think they're going to
11 look at it too?

12 DOCTOR STEINDLER: We have not as yet.
13 We're aware of the fact that they're, I think,
14 planning to look at it. We don't know what their
15 schedule is.

16 CHAIRMAN CARR: Well, it might be worth
17 considering.

18 DOCTOR HINZE: The chairman of their health
19 physics -- I can't give you the exact title -- is a
20 consultant to our Committee. So, there's very good
21 relationships.

22 DOCTOR MOELLER: They have indicated that
23 they would be receptive to a joint meeting on key
24 issues. So, that's a very good suggestion. We'll
25 pursue that also.

1 CHAIRMAN CARR: All right. Let's proceed.
2 Sorry about that.

3 DOCTOR MOELLER: Our next to last item is
4 our recent letter in which we commented on low-level
5 waste programs within the Commission. Let me just--
6 I'm hoping this will be a short issue because we
7 wanted to have time to address the exemptions from
8 regulatory concern or from regulations.

9 The low-level waste letter was not directed
10 to the Division of Low-Level Waste Management
11 Decommissioning. Rather, we intended it to be a
12 commentary on the complete Commission approach on low-
13 level waste. And with that as background, we have
14 about, as I recall, four different points. Our first
15 one was simply that we felt there needed to be a
16 closer tie between the people who are concerned about
17 disposal of the waste, the low-level waste, and the
18 people who are concerned about the mechanisms which
19 generate or produce these wastes.

20 We know that in nuclear power plants, you
21 know as well as we, that through dedication of tools
22 to a hot area and keeping them within the hot area,
23 you can reduce the amount of tools that must be
24 discarded. By cleaning up larger areas in the plant
25 and keeping them clean, you reduce the volumes of

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 waste. So, we just felt from our point of view it
2 seemed like more of a systems approach here would be
3 helpful.

4 Our second item was that the -- in looking
5 at all of the reports that we had to review in order
6 to prepare to interact with the Division of Low-Level
7 Waste, we found that there were so many of them it was
8 hard to keep it straight. So, we suggested that if it
9 doesn't exist and we were not aware of it, that some
10 sort of a road map be prepared to guide people such as
11 us and particularly the agreement states to provide
12 guidance to them in dealing with this -- with all of
13 the regulations and NUREG documents and the DOE or the
14 EPA or everybody's input into this subject.

15 Thirdly, we still continue to believe that a
16 system which would encourage the feedback of operating
17 experience in the low-level waste field would be
18 extremely helpful. We're not saying exactly how to do
19 that at this moment, but we believe it would be
20 helpful and in that same context we offered the
21 commentary that a review of what went wrong at Maxey
22 Flats, Sheffield and West Valley might be helpful also
23 in the way of learning from past experiences.

24 And then, lastly, this was another one of
25 those urgings to the Commission. We didn't say that

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 you should be aggressive, but we did urge that because
2 Barnwell and Beatty will be shutting down in 1992 and
3 we didn't see the states necessarily coming along
4 rapidly enough that whatever could be done to
5 encourage more rapid movement among the states would
6 be helpful.

7 CHAIRMAN CARR: Any questions, Commissioner
8 Roberts?

9 COMMISSIONER ROBERTS: No.

10 COMMISSIONER ROGERS: Well, just coming back
11 to your second point on the road map, how do you see
12 that as a new activity. It's a little troublesome in
13 trying to visualize how much effort might have to go
14 into doing this. What level are you thinking of
15 detail and accuracy and completeness for this road map
16 that you're recommending be developed? I think there
17 is a question of how much staff time and effort might
18 get soaked up in this that could be very large if it's
19 approached from too global a point of view. What are
20 you thinking about there?

21 DOCTOR MOELLER: I'm not sure we discussed
22 exactly what would be covered, but I would see it as
23 an overview. In other words, you could list subjects
24 and say, "If you need information on this, here are
25 the documents." That would be helpful.

1 As I say, I've found -- I must have used 15
2 different documents to get ready for this meeting with
3 the low-level waste people and I wasn't sure I had all
4 the important ones and that's what we're talking
5 about. I hear what you're saying and that is correct.
6 And yet, I'm sure that somewhere within the NRC
7 there's some people who have been here during the
8 growth of the division and so forth who perhaps in a
9 week or two could set down what would help us and help
10 others.

11 COMMISSIONER ROGERS: Well, that might be a
12 helpful way to proceed with the collection of expert
13 opinions here on what these connections are between
14 the different documents.

15 DOCTOR HINZE: Time would really be taken up
16 with the annotation of each one of these. But if
17 there's an abstract available, that could be put into
18 some kind of central files and then could be pulled up
19 on the screen, that would be very useful.

20 CHAIRMAN CARR: Commissioner Curtiss?

21 COMMISSIONER CURTISS: No questions.

22 CHAIRMAN CARR: Let's proceed.

23 DOCTOR MOELLER: The last item is exemptions
24 from regulatory control. We wanted to offer some
25 comments on that. Now, obviously, you had asked that

1 we do so.

2 To introduce the subject, I would say first
3 of all that we have found it to be very complex.
4 Further, I would point out that we have not as a
5 Committee had an opportunity to review the latest
6 proposed policy statement, draft policy statement in
7 detail. Nonetheless, we do have certain comments that
8 we would like to share with you, particularly since
9 you invited us to do so.

10 As we said in our most recent letter, first
11 of all we do like the new terminology. We realize, I
12 guess it was in the congressional law itself that they
13 called it "below regulatory concern." We believe that
14 "exemptions from regulatory control" is a much more
15 accurate name.

16 Now, you have asked the staff for a review
17 of the implications of BEIR V. We will be so bold as
18 to offer some comment on that and it would be in a
19 complimentary sense because you have so carefully and
20 correctly and with great foresight stated that NRC
21 does not assume "an absence or threshold for risk,
22 rather a baseline below which further efforts to
23 reduce risk are unwarranted." In other words, that's
24 what you're seeking.

25 Well, in a sense, BEIR V, in my opinion and

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 based upon what I've read of it, is not going to give
2 you any problems at all. They do say that it looks
3 like solid tumors follow a linear non-threshold
4 relationship whereas BEIR III pushed for the linear
5 quadratic relationship, but in my opinion that's not
6 going to bother you because you have been so careful
7 to state your premise and it's so well expressed.

8 Going on to a third item, I believe, in
9 hindsight, and reading your statements much more
10 carefully, which you should always read things
11 carefully, that your one millirem per year has a dose
12 rate to begin with, until more experience is gained,
13 is probably or it is a very good approach. If we read
14 what you've said carefully, we find that you say on a
15 case by case basis you'll look at higher dose rates.
16 So, I believe in hindsight we would have been wiser to
17 have agreed with what you're doing.

18 Moving on, as I say, we have not reviewed
19 the policy statement in detail, but we do find that
20 it's giving us some problems at least at this day and
21 at this time. Maybe again if we read it more
22 carefully some of these problems will dissolve. But
23 let me tell you what our basic problem is. We are
24 totally in favor of the concept. We would promote
25 vigorous pursuit of the establishment of the

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 exemptions from regulatory control. However, in the
2 draft policy statement, the staff is attempting to
3 address the subject in a generic manner. I believe
4 that there is where they're getting into trouble.

5 Now, let me explain what we mean. If you
6 take the policy statement and apply it to a
7 decommissioned facility, it seems to apply very well.
8 In other words, you say that it's all right to release
9 this facility for public access if you have
10 decontaminated it and brought the dose rates down to
11 whatever level, ten millirem a year, whatever it would
12 be. Knowing that the cleanup is an expensive process,
13 that represents, and as the policy statement would
14 correctly state in this case, it represents ALARA. In
15 other words, you've cleaned it up enough. There's no
16 reason to spend more money to go further.

17 However, if I now move on and try to apply
18 that same policy statement to the other exemptions
19 that you desire to grant, then I begin to have
20 problems. Let me explain what those are.

21 Let's take the subject of low-level waste.
22 And, of course, EPA is the one that has proposed four
23 millirem a year and if it's at that dose rate or less
24 through various environmental pathways, you can
25 dispose of it in a municipal sanitary landfill, a non-

1 NRC licensed facility.

2 However, the fact that it's four millirem or
3 less and that permits you to dispose of those wastes
4 in this type of a facility, in my opinion, and maybe I
5 simply don't understand it, but in my opinion that has
6 little to do with ALARA. It's simply saying that if
7 you are operating at a nuclear power plant or a
8 medical facility, whatever it is, and you have
9 carefully segregated your waste, so in that sense your
10 exemption will promote better handling of the waste
11 because it would encourage segregation and so forth,
12 and if you've carefully segregated them and if perhaps
13 in some cases you may even have to wait and let them
14 decay for a few months to get down to below whatever
15 the level is, then it's permissible to dispose in the
16 sanitary landfill.

17 But to repeat, I do not see the connection
18 between that and ALARA and so I think the policy
19 statement in attempting to be generic, you must be
20 more careful. The staff needs to be more careful.

21 Let's take a third example, the effluent
22 releases from a nuclear power plant. Now, those have
23 been covered in Appendix I, Title 10, Part 50. And
24 again, there ALARA is appropriate. You said and after
25 long rulemaking of ten, 15 years ago, or 20, whatever

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 it was, the conclusion was that if utility controlled
2 their waste at the nuclear plant such that a
3 hypothetical person at ^{the Fence} defense² post did not receive
4 more than five or ten or whatever it is millirem, it's
5 a few millirem a year, then you declared that to be
6 ALARA and there the ALARA concept is correct. The
7 proposed policy statement would apply directly to this
8 in contrast to, in my opinion, not apply to low-level
9 waste.

10 And further in that, not only did you say
11 that was ALARA, but you also said, however, that in
12 terms of collective dose, that if by spending less
13 than \$1,000.00 you can reduce it by one additional
14 person rem, you have to do it, within a radius of 50
15 miles of the plant. Now, that is the correct
16 application of the ALARA concept to collective dose.
17 That is, if by spending a certain amount of money you
18 can reduce the collective dose by a one person rem or
19 one person sievert or whatever it is, then you must do
20 it. To say that if the distribution of this consumer
21 product or the practice of this certain operation does
22 not result in more than 1,000 person rem and therefore
23 that represents ALARA, it does not represent ALARA.

24 I mean I'm coming on a little bit strong,
25 but I really believe what I'm saying. So here are

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 three examples I've cited. Two out of the three, the
2 existing policy statement comes very close to applying
3 and you can run with it.

4 Now, on a third example which would be
5 consumer products, again the existing policy
6 statement, at least I am unable to apply it to
7 consumer products and I'll tell you why once again.
8 If I have a consumer product such as a smoke detector
9 and it only yields a tenth of a millirem per year and
10 it has the potential for tremendous savings of lives,
11 which indeed they do, and we know that millions of
12 people the world over can benefit, then you permit
13 that to be generally licensed and to be available to
14 the general public. But it's not to me necessarily
15 ALARA.

16 In fact, if I had two smoke detector
17 companies that came in and applied to the NRC for
18 licenses to make and sell smoke detectors, and they
19 both did the same thing and accomplished the same
20 thing, but one produced nine-tenths of a millirem per
21 year and the other one one-tenth of a millirem per
22 year, I would not see you nor the staff just blanketly
23 granting approval to both. But rather you would say
24 to the nine-tenths millirem a year company, "What are
25 you doing different? Why can't you get down to the

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 one-tenth?"

2 So, as I say, we see it as moving along well
3 but unless we're wrong, we believe more work is
4 needed. I would certainly encourage a generic
5 approach, but massage it a little bit so that this
6 confusion can be removed, at least what is confusion
7 to us.

8 COMMISSIONER ROGERS: Now that's what you
9 were referring to in your January letter on
10 variability. Is that what you're talking about?

11 DOCTOR MOELLER: Okay. On the variability,
12 on that we think there --

13 COMMISSIONER ROGERS: If it's different, you
14 can come to that later.

15 DOCTOR MOELLER: There is -- the variability
16 there is an excellent example of the application of
17 what we have suggested and we're biased but we are
18 sold --

19 CHAIRMAN CARR: Not as much as we are.

20 DOCTOR MOELLER: We're biased. We're pretty
21 much sold that we're right and therefore we're going
22 to keep shouting.

23 There's an excellent example of the sliding
24 scale standard that we're proposing you consider
25 adopting. In your proposed decommissioning initial

1 staff drafts on standards or regulations for
2 decommissioning, ^{you're} ~~your~~ stating, at least if I've read
3 it properly, that you might approve the release of a
4 decommissioned facility for access by the public if it
5 didn't cause more than 10 millirem a year. Well,
6 we're happy with that because we know that not more
7 than 100 people or so -- you know, pick a number--
8 could crowd into that facility or will be there on a
9 single day and living and working around it. So, what
10 we're saying to you is -- and so we're happy with that
11 because the collective dose will be small.

12 So, we're simply saying to you that we
13 believe it would be a wise policy that the higher the
14 dose rate associated with the exempted practice, the
15 lower the collective dose that you permit. That takes
16 care of your problem of multiple sources. It
17 automatically takes care of that because if something
18 can be used by millions of people, it has a very
19 extremely low associated dose rate. It's only the
20 higher dose rate practices or exemptions can
21 possibly -- well, the higher dose rate practices or
22 exemptions would be restricted to those which can
23 affect only a small number of people.

24 COMMISSIONER ROGERS: Well, would you see
25 that as a relationship that could be fixed once and

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 for all or would you -- this have to be different for
2 each practice that one was considering?

3 DOCTOR MOELLER: I would try something
4 generically, again leaving in your caveat on a case by
5 case basis. We'll look into it in more detail. But I
6 believe it could be done on a generic basis.

7 CHAIRMAN CARR: Any more on that subject?

8 DOCTOR MOELLER: No, sir.

9 CHAIRMAN CARR: Any questions, Commissioner
10 Roberts?

11 Commissioner Rogers?

12 COMMISSIONER ROGERS: Oh, a couple comments.
13 I think you've said that you did support the
14 Commission's initiatives in this direction.

15 DOCTOR MOELLER: Yes, sir.

16 COMMISSIONER ROGERS: Could you be specific
17 as to the benefits of establishing an exemption policy
18 that -- as you see them?

19 DOCTOR MOELLER: I believe in the case of
20 the waste management it will promote much better waste
21 management practices at the waste generators. In our
22 letter on the waste, we have said, of course, that you
23 should look -- we would encourage the staff to look at
24 it with a systems approach, but using this it will
25 encourage better waste management practices.

1 I believe in terms of disposing of low-level
2 waste, it will have many advantages, in relieving some
3 of the burden, the unnecessary burden of extremely--
4 only slightly contaminated waste now filling up our
5 limited burial site capacity. I see it as having many
6 benefits there. I would hope that it would have
7 benefits in promoting and encouraging consumer
8 products such as smoke detectors. I'm sure there are
9 other things out there. Of course, your new -- the
10 newly developed device for detecting explosives at the
11 airports, that's very significant. And indeed, if it
12 can be done, which you've carefully reviewed it and at
13 very low dose rates, then let's encourage it.

14 COMMISSIONER ROGERS: Good. Thank you.

15 There's been a struggle over the name and
16 you've alluded to that and expressed a favorable view
17 of the name "exempt from regulatory control." Names
18 are important because very often people can remember
19 the name, but they can't remember any details about
20 the statement except the name and if the name doesn't
21 adequately convey what the notion is, then there
22 certainly can be misinterpretations of intent and
23 purpose that can occur. And it seems to me that both
24 those names, "below regulatory control," and "exempt
25 from regulatory control," suffer from the deficiency

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 that they convey a sense of finality to the
2 categorization that I find inappropriate.

3 In thinking about that, it seemed to me that
4 the addition of a word such as "conditionally," or
5 "provisionally," to the name might help with that.
6 Have you thought about that aspect of the name?

7 DOCTOR MOELLER: Yes. We -- not so much in
8 the name, but certainly the concept and we commented
9 on that in one of our earlier letters. Indeed you
10 will continue to follow these practices. The staff
11 will, from time to time, check to be sure these smoke
12 detectors are being properly made and so forth. So,
13 the word "conditionally," or something like that would
14 be helpful.

15 CHAIRMAN CARR: Having been associated with
16 a project that never lost its original name no matter
17 how many times you changed it, called Sanguine, I'm
18 not sanguine at all that anybody is going to forget
19 BRC. You can call it whatever you want to and it will
20 stay BRC.

21 COMMISSIONER ROGERS: Yes, it's hard to kill
22 some of these things once they get into the lexicon.

23 DOCTOR STEINDLER: Well, let me just add the
24 comment that the focus is on the final activity,
25 namely a landfill, and at that stage of the game, the

1 term "conditional" lacks a certain amount of
2 credibility if you talk about regulatory control.

3 COMMISSIONER ROGERS: Well, it sort of comes
4 back to some of the issues you were touching on. The
5 one statement doesn't really seem to serve all the
6 purposes that we want to apply it to.

7 CHAIRMAN CARR: Well, I think the BRC term
8 is really "below regulatory concern."

9 DOCTOR STEINDLER: Concern.

10 COMMISSIONER ROGERS: Yes.

11 CHAIRMAN CARR: And it seems to me that's
12 reassuring to people. If you say it's something that
13 a regulator -- so low a regulator shouldn't be
14 concerned with it, that's perfectly plausible to me as
15 a regulator.

16 COMMISSIONER ROGERS: Well, one can take
17 quite the opposite --

18 CHAIRMAN CARR: That's why I want the level
19 so high.

20 COMMISSIONER ROGERS: Quite the opposite
21 point of view that there should never be any lack of
22 regulatory attention to anything that has any kind of
23 a health implication that somehow it might be high or
24 low priority but never totally out of sight. So, I'm
25 not sure that I would make that same assessment.

1 CHAIRMAN CARR: I only brought it up because
2 I think we'll have a hard time getting rid of the tag.

3 COMMISSIONER ROGERS: Yes, that could very
4 well be.

5 In your letter, you also expressed approval
6 of the NRC staff's efforts to include in the policy
7 statement recommendations to discourage frivolous uses
8 of radioactive materials. What's your opinion of who
9 should decide what is frivolous and what would you
10 suggest to be the criteria for deciding if a proposed
11 use is or is not frivolous?

12 DOCTOR MOELLER: We have discussed that in
13 detail and let me just respond on two ways. One is in
14 the SECY document. We thought the paragraph that was
15 in there that was suggested as a means for covering
16 frivolous applications, we thought that was a good
17 paragraph. We were careful in our letter to say we
18 have no idea how you determine what's frivolous.
19 What's frivolous -- like in the U.K. --

20 COMMISSIONER ROGERS: Doesn't that really
21 introduce a new dimension into the thing?

22 DOCTOR MOELLER: Yes.

23 COMMISSIONER ROGERS: And why do we have to
24 worry about anything except the health and safety
25 aspects of these sources? And if one talks about

1 something totally different, as to whether it's a
2 frivolous use or not a frivolous use, it's a totally
3 new dimension, it seems to me, in the consideration
4 whereas what we're really concerned about is health
5 and safety. If there are good reasons to have health
6 and safety doubts about something, then we should be
7 properly conservative in how we deal with those, it
8 seems to me.

9 But a judgment as to whether something is
10 frivolous or something is essential depends very much
11 on where one is coming from and one's point of view as
12 we've learned with the gemstone issue, for example, to
13 hear the comments there of how essential that was for
14 a certain part of the commercial activities.

15 CHAIRMAN CARR: If the mantle in the lamp is
16 for reading, it's not frivolous. If it's for camping,
17 it's frivolous, right?

18 COMMISSIONER ROGERS: Well, you may even say
19 what it is you're reading that's frivolous or not
20 frivolous. Who's going to decide that?

21 DOCTOR MOELLER: You already though are
22 practicing judgments, I believe. In terms of the
23 policy statement, as I recall, at least some of the
24 earlier drafts, said that before you would approve of
25 a radioactive source to do something, you would check

1 to be sure there was not a cheaper, non-radioactive
2 way of accomplishing the same task.

3 COMMISSIONER ROGERS: Yes.

4 DOCTOR MOELLER: So, you are making some
5 judgments already.

6 COMMISSIONER ROGERS: Well, presumably
7 that's because we're concerned about a health issue
8 rather than an issue of frivolous.

9 DOCTOR MOELLER: Oh, whether it's frivolous.
10 That's correct. That's a good point.

11 COMMISSIONER ROGERS: I find that frivolous
12 judgment one very, very touchy for us to get into.

13 DOCTOR STEINDLER: You obviously have been
14 listening to our conversations in our meeting because
15 we had a very similar sort of discussion.

16 COMMISSIONER ROGERS: Well, I haven't been.

17 DOCTOR STEINDLER: The issue, however, has
18 got, like everything else, two sides and the concern
19 on the other side of the coin is whether or not one
20 would allow, regardless of the absolute magnitude of
21 the health issue, someone to introduce a radioactive
22 source for one reason or another into the crib blanket
23 of a small child. The arguments about numerical
24 standards and health effects, BEIR V or whatever else,
25 rapidly take on a much different view when we get into

1 the non-technical area. And it's in that context that
2 the notion of frivolity now has, I think, some more
3 meaning.

4 I agree, however, that the method of
5 adjudicating that is an issue which you need to look
6 at very carefully because it's out of your normal
7 charter, I would guess. But that's the concern that
8 we have.

9 COMMISSIONER ROGERS: The concern is a
10 health concern. It deals with perhaps a domain that
11 we don't understand that well and we're not sure
12 enough about and so we want to be very careful to --

13 DOCTOR STEINDLER: I'm trying to move the
14 concern out of the numerical value and into the non-
15 numerical area.

16 COMMISSIONER ROGERS: Fine. Right. Yes,
17 I'm with you there.

18 DOCTOR STEINDLER: And it's in that context
19 that it's difficult.

20 COMMISSIONER ROGERS: Yes. Right.

21 Does anybody else want to talk about
22 frivolity?

23 DOCTOR HINZE: We've tried to change that
24 name, but with no success.

25 COMMISSIONER ROGERS: Yes. Well, it's just

1 that there's certain aspects of it that I find
2 troublesome from a regulatory agency point of view.

3 Just one other question that deals with
4 nothing that we've been talking about today. But how
5 is the division of responsibilities between ACNW and
6 ARCS working out? How do you see that now? That was
7 something that we've been looking at, hearing a little
8 bit about. What's your opinion on that?

9 DOCTOR MOELLER: Overall, I think it's
10 working very well. In fact, I cannot really cite any
11 truly -- areas that would truly be problems. The
12 decommissioning item, as you may know, recently came
13 up through Mr. Fraley and Carlyle Michelson and
14 myself. We've written up a memo which -- and agreed
15 between the two committees and then I believe he's
16 writing -- Mr. Fraley is writing to Chairman Carr to
17 tell him -- or suggest or ask for his approval of what
18 we're considering doing. But it really --

19 COMMISSIONER ROGERS: You seem to be able to
20 work those issues out.

21 DOCTOR MOELLER: We have more than enough
22 work to do, so it's not a case of them taking things
23 over that we want to do. We all have more than enough
24 to do and I see no problems.

25 COMMISSIONER ROGERS: Well, it's really not

1 just that but whether anything then falls between the
2 cracks.

3 DOCTOR MOELLER: We hope not. We'll try to
4 be sure that it does not.

5 CHAIRMAN CARR: Commissioner Curtiss?

6 COMMISSIONER CURTISS: Just two quick
7 questions on BRC. First, what led you to conclude
8 that one millirem for the individual dose was too low
9 and a three to five millirem would not appear to be
10 unreasonable, I think your words were, first.

11 DOCTOR MOELLER: Yes.

12 COMMISSIONER CURTISS: And secondly, would
13 ten millirem appear to be unreasonable?

14 DOCTOR MOELLER: I think, in response to
15 that, that ten millirem would be unreasonable if it
16 were a source or a practice that could affect millions
17 of people or hundreds of thousands because those same
18 people would also be affected by other sources. If
19 you combine too many ten millirem sources, you're
20 reaching an unacceptable level.

21 COMMISSIONER CURTISS: Under the approach
22 that's been discussed, if widespread practices were
23 established on a level of one millirem and ten
24 millirem were reserved for releases from regulatory
25 control for decontaminated sites and for waste streams

1 from low-level waste facilities, would that appear to
2 be unreasonable?

3 DOCTOR MOELLER: Really not. We were
4 pushing the higher level than one millirem just to get
5 it up to a higher level.

6 COMMISSIONER CURTISS: I'm curious to know
7 whether -- it's an interesting discussion.

8 CHAIRMAN CARR: It's not a real technical
9 basis for -- ten, one, three, four, five, you know,
10 it's a few.

11 COMMISSIONER CURTISS: That was my question,
12 whether three to five is reasonable because that's
13 what other people do or because there's some technical
14 conclusion that's driven you to that.

15 DOCTOR MOELLER: Well, mainly, the three to
16 five would be based on the premise that most people
17 would not be exposed to more than three such sources.
18 We'd like to stay in a ten or 15 millirem total dose
19 rate range. You need to gather some information on
20 that or we do.

21 CHAIRMAN CARR: Even though we're in a
22 hundred millirem background?

23 DOCTOR MOELLER: Right, right. And again,
24 the one millirem, one reason it troubled us a little
25 bit, but as I say, on rereading your proposed

1 statement, it makes very good sense that it's a
2 beginning level and you'll look on a case by case
3 basis at higher levels. But one millirem concerned us
4 since that is the level at which the NCRP truncates
5 its collective dose calculations. That was simply our
6 concern.

7 COMMISSIONER CURTISS: No further questions.

8 CHAIRMAN CARR: Let me ask you if you're--
9 what plans you have for replacing Doctor Smith. Would
10 your activities be impacted if we kept you three
11 members?

12 DOCTOR MOELLER: They would be, yes. Yes,
13 sir. And, in fact, our next agenda item as soon as
14 this meeting is over was to discuss nominations or
15 candidates for the potential position.

16 CHAIRMAN CARR: All right.

17 DOCTOR MOELLER: I would ask, please, that
18 you do restore us to four people.

19 CHAIRMAN CARR: And how about the staff
20 resources? Are they adequate to provide the types of
21 constructive comments and detailed rationales that are
22 most helpful to us?

23 DOCTOR MOELLER: They are rapidly reaching
24 that level. Howard Larson has joined our supporting
25 staff and so that gives us at the moment three people,

Abrams

1 Charlotte Adams² and Richard Major and Howard Larson.
2 And we have a fourth position which either will be a
3 fellow or a full-time staff member. And I think when
4 we reach that, we can really move along the way we
5 want to. We've been definitely hampered up to the
6 present.

7 CHAIRMAN CARR: All right. Well, I'd like
8 to thank you, Doctor Moeller, Doctor Steindler and
9 Doctor Hinze, for providing this update on ACNW
10 activities. I know these periodic discussions are
11 helpful to each of us on the Commission in providing
12 an opportunity to discuss your recommendations on
13 waste management issues.

14 ACNW has had a formidable task since its
15 inception in 1988 in becoming familiar with the broad
16 scope of waste management issues confronting the
17 Commission. Now that this period is behind us, I
18 appreciate your willingness to focus your attention on
19 the specific technical issues of particular interest
20 to the Commission that I forwarded in my November memo
21 to you.

22 I urge you to work with the staff in
23 formulating your quarterly program plan to optimize
24 the timing of your ACNW reviews. I also encourage you
25 to continue the practice of attending major meetings

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 arranged by the staff on key technical issues to
2 enhance communication and to optimize the use of our
3 resources.

4 I appreciate your continuing efforts to keep
5 us informed of your Committee's efforts through our
6 personal staffs.

7 Do any of my fellow Commissioners have any
8 additional comments?

9 COMMISSIONER ROGERS: Just that I thought it
10 was an excellent session and --

11 COMMISSIONER ROBERTS: It certainly was.

12 COMMISSIONER ROGERS: -- really enjoyed it
13 very much.

14 DOCTOR MOELLER: Thank you, sir.

15 CHAIRMAN CARR: We stand adjourned.

16 (Whereupon, at 3:45 p.m., the above-entitled
17 matter was adjourned.)
18
19
20
21
22
23
24
25

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: BRIEFING BY ADVISORY COMMITTEE ON NUCLEAR WASTE

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: FEBRUARY 21, 1990

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.



Reporter's name: Peter Lynch

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVENUE, N.W.
WASHINGTON, D.C. 20005