ACNW-0034
PDR 5-30-91

TABLE OF CONTENTS
30TH ACNW MEETING
APRIL 23-24, 1991

5-24-91

		PAGE
I.	Chairman's Report (Open)	1-2
II.	Preliminary Draft - "Staff Technical Position on Underground Facility Design - Thermal Loads" (Open)	2-10
III.	Decommissioning Activities at Selected Sites (Non-Reactor) (Open)	
	A. Site Decontamination Management Plan	10-13
	B. West Valley Demonstration Project	14-15
IV.	Response to SRM on Advantages and Disadvantages of the Individual Dose vs. Collective Dose Approach to Determine Risk from a Waste Repository (Open)	15-16
V.	NRC Staff Approach to Dealing with Uncertainties in Supplementing EPA's High-Level Waste Standards (Open)	16-21
VI.	Executive Session (Open/Closed)	
	A. Reports and Memoranda	22
	1. Individual and Collective Dose Limits and Radionuclide Release Limits (Report to Mr. Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards, dated April 29, 1991).	
	2. Consideration of Human Intrusion in the Licensing of a High-Level Waste Repository (Report to Chairman Carr, dated April 29, 1991.)	
	3. Program Plan for the Advisory Committee on Nuclear Waste (Report to Chairman Carr, dated April 29, 1991.)	
	4. Draft Staff Technical Position on Underground Facility Design -- Thermal Loads (Memorandum for Mr. B. J. Youngblood Director, Division of High-Level Waste Management, from Mr. Raymond Fraley, dated April 29, 1991.)	

DESIGNATED ORIGINAL

Certified By

TABLE OF CONTENTS

B.	Human Intrusion for a High-Level Waste Repository	22-23
C.	Revising 10 CFR Part 61 Relative to Attention to Leaching Resistance of the Low-Level Waste Form	23-25
D.	Working Group Report on Integration of Geophysics into Site Characterization of a High-Level Waste Repository	25
E.	ACNW Four-Month Plan (Open)	25
F.	Three-Month Schedule (Open)	25
G.	Committee Activities (Closed)	25
H.	ACNW Future Activities (Open)	26-28

TABLE OF CONTENTS

APPENDICES

I. Meeting Attendees

II. Future Agenda

III. Documents Received

A. Documents Received From Presenters and ACNW Staff

B. Meeting Notebook Contents

acceptable. The staff has determined that the proposed changes do not alter any initial conditions assumed for the design basis accidents previously evaluated nor change operation of safety systems utilized to mitigate the design basis accidents.

The proposed changes do not increase the probability or consequences of accidents. No changes are being made in the types of any effluents that may be released offsite, and there is no significant increase in the allowable individual or cumulative occupational radiation exposure. Accordingly, the Commission concludes that the proposed action would result in no significant radiological environmental impact.

With regard to potential nonradiological impacts, the proposed changes to the Technical Specifications involve components in the plant which are located within the restricted area as defined in 10 CFR part 20. They do not affect nonradiological plant effluents and have no other environmental impacts. Therefore, the Commission concludes that there are no significant nonradiological impacts associated with the proposed amendment.

Alternatives to the Proposed Action

Since the Commission concludes that there are no significant environmental effects that would result from the proposed action, any alternatives with equal or greater environmental impacts need not be evaluated.

Alternative Use of Resources

The action would involve no use of resources not previously considered in the Final Environmental Statement for the Oyster Creek Nuclear Generating Station dated December 1974.

Agencies and Persons Consulted

The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

Finding of No Significant Impact

The staff has determined not to prepare an environmental impact statement for the proposed amendment.

Based upon the foregoing environmental assessment, the NRC staff concludes that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the application for amendment dated January 11, 1991, as supplemented March 12, 1991, which are available for public inspection in the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, 20555 and the Local Public Document Room, Ocean County Library, Reference Department, 101 Washington Street, Toms River, New Jersey 08753.

Dated at Rockville, Maryland this 4th day of April 1991.

For the Nuclear Regulatory Commission.

John F. Stolz,

Director, Project Directorate I-4, Division of Reactor Projects-I/II, Office of Nuclear Reactor Regulation.

[FR Doc. 91-8551 Filed 4-10-91; 8:45 am]

BILLING CODE 7590-01-M

Nuclear Regulatory Commission

NUREG: Issuance, Availability

The Nuclear Regulatory Commission has issued NUREG-1435, Volume 1, Status of Safety Issues at Licensed Power Plants, TMI Action Plan Requirements. The document covers the status of implementation and verification of TMI Action Plan Requirements at licensed plants. It also provides a historical perspective of implementation during the last ten years.

This NUREG has been prepared to provide a comprehensive description of the implementation and verification status of all the TMI requirements at licensed plants and to make this information available to other interested parties, including the public.

Copies of the Report have been placed in the NRC's Public Docket Room, the Gelman Building, 2120 L Street, NW., Washington, DC 20555. Copies of the Report may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Post Office Box 37082, Washington, DC 2013-7082. GPO deposit account holders may charge order by calling 202/275-2060. Copies are also available from the National Technical Information Service, Springfield, Virginia 22161.

Dated at Rockville, Maryland, this 20th day of March 1991.

For the Nuclear Regulatory Commission.

Frank P. Gillespie,

Director, Program Management, Policy Development and Analysis Staff, Office of Nuclear Reactor Regulation.

[FR Doc. 91-8550 Filed 4-10-91; 8:45 am]

BILLING CODE 7590-01-M

Advisory Committee on Nuclear Waste; Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 30th meeting on April 23 and 24, 1991, room P-110, 7920 Norfolk Avenue, Bethesda, MD, 8:30 a.m. until 5 p.m. each day. The entire meeting will be open to the public.

The agenda for the meeting will be as follows:

A. Review and comment on an NRC staff Technical Position on the High-Level Waste Repository Design for Thermal Loads.

B. Briefing on the HLWM staff Approach to Dealing with Uncertainties in Implementing the EPA's High-Level Waste Radiation Protection Standard, 40 CFR part 191.

C. Briefing on decommissioning activities at selected nonreactor sites.

D. Discuss ongoing projects concerning human intrusion for a high-level waste repository.

E. Response to a recent staff Requirements Memorandum related to revising 10 CFR part 61 relative to attention to leaching resistance of the low-level waste form.

F. Prepare ACNW's next four-month plan to the Commission for the period May-August 1991.

G. Hear a report on a recent ACNW Working Group Meeting concerning Integration of Geophysics Into Site Characterization of a High-Level Waste Repository.

H. Consideration of the advantages and disadvantages of using collective dose criteria as a licensing basis for a HLW repository.

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

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: April 5, 1991.

John C. Hoyle,

Advisory Committee Management Officer.

[FR Doc. 91-8466 Filed 4-10-91; 8:45 am]

BILLING CODE 7590-01-M

Advisory Committee on Nuclear Waste, Working Group on Integration of Geophysics Into Site Characterization of a High-Level Waste Repository; Meeting

The Working Group on Integration of Geophysics into Site Characterization of a High-Level Waste Repository will hold a meeting on April 22, 1991, room P-110, 7920 Norfolk Avenue, Bethesda, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Monday, April 22, 1991—8:30 a.m. until the conclusion of business.

The Working Group will focus on the role of geophysical testing in the characterization of a high-level waste repository site. The Working Group will discuss the importance and advantages of and potential results from geophysical testing methods and the application of those methods in the characterization of a high-level waste site.

Oral statements may be presented by members of the public with the concurrence of the Working Group Chairman; written statements will be accepted and made available to the Group. Recordings will be permitted only during those sessions of the meeting when a transcript is being kept, and questions may be asked only by members of the Working Group, its consultants, and staff. Persons desiring to make oral statements should notify the ACNW staff members named below as far in advance as is practicable so that appropriate arrangements can be made.

During the initial portion of the meeting, the Working Group, along with any of its consultants who may be present, may exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Working Group will then hear presentations by and hold discussions with invited speakers from the Department of Energy, State of Nevada, U.S. Geological Survey, and other interested persons regarding this review.

Further information regarding the agenda for this meeting, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefore can be obtained by a prepaid telephone call to the cognizant ACNW staff member, Ms. Charlotte Abrams (telephone 301/492-8371 between 7:45 a.m. and 5:30 p.m.). Persons planning to attend this meeting are urged to contact the above named individual one or two days before the scheduled meeting to be advised of any changes in schedule, etc., that may have occurred.

Dated: April 4, 1991.

R.K. Major,

Chief, Nuclear Waste Branch.

[FR Doc. 91-8457 Filed 4-10-91; 8:45 am]

BILLING CODE 7590-01-M

[Docket No. 50-395]

South Carolina Electric & Gas Co. and South Carolina Public Service Authority Virgil C. Summer Nuclear Station, Unit No. 1; Issuance of Amendment No. 96 to Operating License No. NPF-12

The U.S. Nuclear Regulatory Commission (Commission) has issued Amendment NO. 96 to Operating License No. NPF-12 issued to South Carolina Electric & Gas Company and South Carolina Public Service Authority, which revised the Technical Specifications for operation of the Virgil C. Summer Nuclear Station, Unit No. 1, located in Fairfield County, South Carolina. The amendment is effective as of the date of issuance.

The amendment changes the Technical Specifications to revise Surveillance Requirement 3/4.4.5, Steam Generators, to allow for an alternative to plugging or sleeving of tubes with degradation in the tube sheet area. This alternative method is designated the L* criterion.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR chapter I, which are set forth in the license amendment.

Notice of Consideration of Issuance of Amendment and Opportunity for Hearing in connection with this action was published in the Federal Register on September 29, 1988 (53 FR 38126). No request for a hearing or petition for leave to intervene was filed following this notice.

Alternative to the Proposed Action

Since the Commission has concluded that there are no significant environmental effects that would result from the proposed action, any alternatives with equal or greater environmental impacts need not be evaluated.

The principal alternative would be to deny the requested amendment. This would not reduce the environmental impacts of plant operation and would result in reduced operational flexibility.

Alternative Use of Resources

This action does not involve the use of any resources not previously considered in the Final Environmental Statements for the V.C. Summer Nuclear Generating Station, Unit No. 1, dated May 1981.

Agencies and Persons Consulted

The staff reviewed the licensee's request and did not consult other agencies or persons.

Finding of No Significant Impact

The Commission has determined not to prepare an environmental impact statement for the proposed license amendment.

Based upon the foregoing environmental assessment, we have concluded that the proposed action will not have a significant effect on the quality of the human environment.

The Commission has prepared an Environmental Assessment related to the action and had determined not to prepare an environmental impact statement. Based upon the environmental assessment, the Commission has concluded that the issuance of this amendment will not have a significant effect on the quality of the human environment.

For further details with respect to the action see, (1) The application for amendment dated August 1, 1988, as revised August 30, 1990, (2) Amendment No. 96 to License No. NPF-12, (3) the Commission's related Safety Evaluation, and (4) the Commission's Environmental Assessment (56 FR 13504). All of these items are available for public inspection at the Commission's Public Document

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

April 8, 1991

SCHEDULE AND OUTLINE FOR DISCUSSION
30TH ACNW MEETING
APRIL 23-24, 1991

Tuesday, April 23, 1991, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland

1) 8:30 - 8:45 a.m.

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

2) 8:45 - ~~12:00 Noon~~ 1:55 p.m.

NRC Staff Technical Position on the High-Level Waste Repository Design for Thermal Loads (Open) (WJH/CEA)

(10:~~00~~ 30 - 10:~~15~~ 50 :Break)

2.1) How TP fits into proactive program
2.2) Technical basis for the STP
2.3) Presentation of STP
2.4) General Discussion
2.5) Discuss Possible ACNW Report

12:~~00~~ 37 - 1:~~00~~ 40 p.m. **** LUNCH ***

3) 1:~~00~~ 55 - ~~3:00~~ 4:25 p.m.

Briefing by the NRC Staff on Decommissioning Activities at selected (non-reactor) sites (Open) (DWM/HJL)
3.1) Staff Presentation
3/2) General Discussion

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

4) ~~3:15~~ 4:30 - ~~4:30~~ 5:45 P.M.

Consider a Response to an SRM on the Advantages and disadvantages of the individual dose vs. collective dose approach to determine risk posed to the public health and safety from a waste repository (Open) (DWM/GNG)
4.1) Assumptions needed
4.2) Cut-off levels used
4.3) Manner in which the doses might be truncated
4.4) Dose limits versus release limits

[= Transcribed portion

30th ACNW Meeting
April 23-24, 1991

5) 4:30 - 5:30 p.m. Preparation of ACNW Reports (Open)
Discuss Proposed ACNW reports re:
5.1) TP on HLW Repository Design Thermal Loads (WJH/CEA)
5.2) Individual dose limit approach vs. release limit approach (DWM/GNG)
5.3) Human Intrusion (DWM/SEM/GNG)

5:45 p.m. Closed Session to discuss ACNW staff activities

6:00 (est)
~~5:30~~ p.m. ****** RECESS ******

Wednesday, April 24, 1991, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland

6) 8:30 - ~~11:45 a.m.~~ 12:10 p.m. NRC Staff Approach to Dealing with Uncertainties in Implementing EPA's High-Level Waste Stds (Open) (MJS/HJL)
6.1) Staff Presentation
6.2) Preparation of Possible ACNW Comments

(~~10:30~~ - 10:~~45~~ 15 a.m. BREAK) 9:55

7) ~~11:45~~ 12:10 - 12:~~45~~ 50 ~~a.m.~~ p.m. Discuss ACNW Project Concerning Human Intrusion for a HLW Repository (Open) (DWM/GNG/SEM)
7.1) Discuss Project
7.2) Prepare Report

12:~~45~~ 50 - ~~1:45~~ 2:00 p.m. ********* LUNCH *******

8) ~~1:45~~ 2:00 - 2:45 P.M. Anticipated ACNW Activities (Open) (DWM/RKM
8.1) The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters as appropriate (Open)
8.1.1) Set May Agenda
8.1.2) Prepare ACNW four-month plan for May-August 1991
8.1.3) ACNW Staff Research Projects
8.1.4) Set topics for Visit to CNWRA (June 26-28, 1991)

30th ACNW Meeting
April 23-24, 1991

9)	2:45 - 3:00 p.m. (Not presented)	Working Group Chairman's Report on Recent Meeting Concerning Integration of Geophysics Into Site Characterization of a High-Level Waste Repository (Open) (WJH/CEA)
10)	3:~~00~~ 40 - ~~3:45~~ 4:35 p.m.	Consider a Response to a SRM related to Revising 10 CFR Part 61 Relative to Attention to Leaching Resistance of the Low-Level Waste Form (Open) (MJS/HJL)
	3:45 - 4:00 p.m.	*** BREAK ***
11)	4:00 - 5:30 p.m.	Preparation of ACNW Reports (Open) 11.1) Continue discussion of proposed ACNW reports as appropriate 11.1.1) TP on Thermal Loads 11.1.2) ACNW Four-month plan 11.1.3) Human Intrusion 11.1.4) Leaching Resistance of LLW Form 11.1.5) Individual vs. Collective Dose
	4:45 ~~5:30~~ p.m.	ADJOURN

CERTIFIED

CERTIFIED COPY
Issued: May 24, 1991

MINUTES OF THE 30TH MEETING OF THE
ADVISORY COMMITTEE ON NUCLEAR WASTE
APRIL 23-24, 1991
BETHESDA, MARYLAND

The 30th meeting of the Advisory Committee on Nuclear Waste was held on Tuesday and Wednesday, April 23-24, 1991, at 7920 Norfolk Avenue, Bethesda, Maryland.

Dr. Dade W. Moeller, Committee Chairman, convened the meeting at 8:30 a.m. and briefly reviewed the schedule for the meeting. He stated that the meeting was being conducted in conformance with the Federal Advisory Committee Act. He announced that a transcript of some of the open 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: ACNW members, Drs. William J. Hinze, Dade W. Moeller, Paul W. Pomeroy, and Martin J. Steindler were present. ACNW consultant, Dr. Ronald Kathren, was present. For a list of attendees, see Appendix I. Copies of the transcript taken at this meeting may be purchased from Ann Riley & Associates, Ltd., 1612 K Street, N.W., Washington, D.C. 20006.]

I. CHAIRMAN'S REPORT (Open)

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

Dr. Moeller announced that House and Senate bills have been submitted by Representative G. Miller (D-CA) and Senator L. Pressler (R-SD) to limit or replace the NRC Below Regulatory Concern (BRC) policy. Some of the legislation would amend the Atomic Energy Act to assert a state's right to regulate what the NRC does not regulate and to void the 1990 BRC policy.

Dr. Moeller reported that a Texas judge has voided the choice of the Fort Hancock site. The Texas Low-Level Radioactive Waste (LLW) Disposal Authority conceded that it might not meet the January 1993 deadline for having a disposal site for LLW.

Dr. Moeller reported that land withdrawal has been approved by the Bureau of Land Management (BLM) giving the U.S. Department of Energy (DOE) access to the Waste Isolation Pilot Plant (WIPP) site. The New Mexico Congressional delegation has acted to block the land

withdrawal on the basis of insufficient guarantees of protection of public health and safety.

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

- The U.S. Environmental Protection Agency (EPA) has announced that it expects to release Working Draft No. 3 of its "High-Level Waste Standards" very soon.

- The Idaho National Engineering Laboratory (INEL) has met a major milestone in the Bin Test Program for the WIPP facility. The Bin Test Program is designed to produce data to be used during the five-year test phase of transuranic waste disposal at WIPP. Dr. Moeller asked the Committee to indicate if they wanted to explore this item in greater depth.

- The NRC intends to issue a Federal Register Notice and Commission Order on the license application of Louisiana Energy Services to operate a gas centrifuge uranium enrichment plant near Homer, Louisiana (SECY-91-091, dated April 4, 1991).

Dr. Moeller observed that it might be worthwhile for the Committee to hear about the LLW disposal facility in Utah for naturally occurring radioactive wastes (NORM) because these wastes have half lives far longer than most fission products or induced activity elements.

Dr. Moeller discussed his tour of the waste management facilities at the National Institutes of Health (NIH), Bethesda, Maryland, on Monday afternoon, April 22, 1991 (Mr. Howard Larson, ACNW staff, accompanied Dr. Moeller on the tour). Dr. Moeller passed on an invitation from Dr. Walker, NIH, to the other Committee members to tour the NIH facilities sometime in the future.

Dr. Moeller informed the Committee that Mr. Raymond Fraley, ACNW Executive Director, and he met with Chairman Carr on Monday morning, April 22, 1991. During the meeting, a number of requests that Chairman Carr had made to the Committee were discussed and clarified.

II. PRELIMINARY DRAFT - "STAFF TECHNICAL POSITION ON UNDERGROUND FACILITY DESIGN - THERMAL LOADS" (Open)

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

The presentation was given by Mr. Joe Holonich, Mr. Mysore Nataraja, and Mr. Naiem Tanious. Mr. Joe Holonich opened the presentation with an overview of the staff's proactive program and the relationship of staff technical positions (STP) and other guidance documents.

Mr. Holonich explained that the high-level waste (HLW) reactive program responds to DOE actions or requests. The proactive program of the Division of High-Level Waste Management (HLWM) provides guidance to the DOE in the form of rulemakings, regulatory guides, staff technical positions, license application review plans, and staff positions. Staff technical positions contain technical information and may be changed as the HLW program evolves and as DOE conducts site characterization and gathers new information.

Dr. Steindler voiced concern at the prospect of DOE aiming at an evolving target. Dr. Pomeroy asked what criteria determined whether the staff would choose to write a technical position or a guidance letter. Mr. Holonich stated that letters are issued as a type of guidance, but a technical position provides more definitive guidance and goes through a public comment period. Dr. Moeller asked if there was a general reference list of technical positions and Mr. Holonich stated that the staff would provide the Committee with a copy of the HLWM products list and any future revisions to that list. The products list contains a listing of technical positions. Mr. Holonich also noted that, as technical positions are completed, they are published as NUREGs and assigned a number.

Technical positions will be incorporated into a licensing review plan. They may be incorporated in a statement that directs the licensee to demonstrate compliance with a particular technical position, or the detailed guidance from an STP may be extracted and placed in the review plan as acceptance criteria.

Dr. Hinze asked if other groups such as hydrologists, geologists, and geochemists had been integrated into the preparation of the STP. He was particularly concerned that the hydrologists and geologists had input with respect to the thermal effects on zeolites and other minerals. Mr. Holonich responded that in the development process for STPs, an effort is made to assemble representatives from the affected technical disciplines, but the STP is not written by a committee. The various technical disciplines will comment and review the STP. In addition, the staff obtains advice from a representative of the Office of the General Counsel (OGC) and input from the Office of Nuclear Regulatory Research (RES). A project manager is assigned to each STP and it is that person's job to make sure that all relevant parties are integrated into the process.

The staff has developed a policy memorandum that describes how technical positions should be put together and the reasons for STPs. Those reasons are:

1. To provide guidance to DOE on sections or parts of NRC regulations for which DOE has requested guidance;
2. To identify areas where there is a difference in interpretation of Part 60;
3. To clarify parts of the regulations that are complex or controversial;
4. To clarify areas of the regulations that could be a problem during a hearing; or
5. To clarify areas where previous experience indicates guidance is needed.

The STP on thermal loads was generated based on reasons three and four.

The present suite of STPs focuses on specific issues. These STPs will be revised as the need arises to incorporate new information developed through site characterization. The need for other STPs will be determined as a result of the Systematic Regulatory Analysis (SRA) being conducted by the Center for Nuclear Waste Regulatory Analyses (CNWRA).

Mr. Nataraja followed Mr. Holonich with a presentation of how the HLW Geotechnical Engineering Section is handling their part of proactive work and how that work fits into the overall work plan.

The Geotechnical Engineering Section has three major areas of interest at this time. These include repository design and construction, site characterization, and performance objectives. Areas of interest with respect to design and construction include the exploratory studies facility, the geological repository operations area, and borehole and shaft seals.

With respect to site characterization, the main focus is on information that DOE will gather as input to the design of the geological repository operations area. There is specific interest in the preclosure performance objectives that deal with the retrievability considerations and radiation protection considerations.

Mr. Nataraja noted that the staff engineers had completed three generic technical positions prior to 1986, but these positions are now outdated since they were written when three different geologic media were under consideration for a repository site. These three technical positions were on information needs to provide input to the design of the geologic repository operations area, in situ testing during site characterization, and borehole and shaft seals. The STP on borehole and shaft seals has been updated for the Yucca

Mountain site and was completed in 1989. An STP on seismic design considerations for the geologic repository operations area has been proposed.

There is no requirement that STPs should be generic, but an attempt is made to make them generic. If there is a site-specific issue that needs to have a technical position, an STP can be issued specific to the site.

The additional topics identified by the SRA will be reviewed and a decision will be made whether those topics need to be covered under rulemakings, regulatory guides, or technical positions. More topics may be identified as a result of interactions with the DOE.

The DOE, in the site characterization plan, acknowledged that thermal loading was a complex technical topic. Concern with thermal loading impacts the preclosure and postclosure periods. The topic of thermal loading is related to several technical disciplines and requires coordination of DOE characterization activities. Because of a lack of scientific understanding and engineering experience with high temperature behavior of the natural system, there is not much reference material. Therefore there will be a need to make predictions based on models that have been validated.

Mr. Nataraja noted that the DOE, in the SCP, had not provided a clear picture of what sort of program it had planned to answer the concerns related to thermal loading; therefore, the staff had picked this topic for an STP. In addition, the staff already had a basis to pursue the topic of thermal interaction due to the publication of several NUREGs on the topic by an NRC consultant, ITASCA.

Mr. Nataraja introduced Mr. Terry Brandshaug of ITASCA and noted that Mr. Brandshaug had used the technical bases from the NUREGs in preparing the background information for the STP. Mr. John Buckley was the original author of the STP; after his transfer to the Quality Assurance Section, Mr. Naiem Tanious took over as the lead technical staff person on the STP. Other participants in the formulation of the STP included Mr. Nataraja, Mr. Joe Bunting, and Mr. Jim Wolf (OGC). Mr. Michael Lee was the project manager. Reviewers from the technical staff included Dr. John Trapp, Mr. Jeff Pohle, Mr. David Brooks, Mr. Norman Eisenberg, Mr. Daniel Fehringer, and Mr. Richard Codell. Representatives of the CNWRA also reviewed the document or acted as a coordinator of the CNWRA reviews, ITASCA products, and NRC products.

ITASCA is now subcontracted through the CNWRA. The goal is for the CNWRA to eventually become self-reliant and replace all subcontractors. The CNWRA does not now have an active research project on thermal hydrology, but there may be a research project on that topic in the future.

Mr. Nataraja noted that the Nuclear Waste Technical Review Board (NWTRB) also raised a concern with thermal loading and that group is planning to convene a workshop on the topic.

The staff hopes that DOE will read the STP and agree that there is a need to consider all possible experiments and modeling techniques that should be developed to assess thermal loading. The staff believes that DOE's goal should be to try to achieve an understanding of the coupled processes related to thermal loading. They would like to see an evaluation from the DOE of the advantages and disadvantages of emplacing waste at higher temperatures.

Dr. Steindler commented on the view that the STP implies that the DOE is going to be required to use the repository as a laboratory during preclosure. Mr. Nataraja replied that the performance confirmation program encourages DOE to consider the operating repository as a research facility in which they would attempt to better understand the behavior of the emplaced waste.

Mr. Jim Wolf, OGC, offered some comments on the regulations. He stated that "incorporated in the regulations is . . . a learning curve in which, during site characterization, the major amount of uncertainty reduction occurs." There will be an attempt during that period to understand the system so that the residual uncertainties are relatively small at the time of construction authorization. Also, at that time it is hoped that enough information will be available to judge whether the EPA standard can be met with reasonable assurance. This can be done by incorporating some conservative assumptions to deal with the absence of data that would be obtained later. The regulations provide for the license application to be as complete as possible at the time of submission, but they also imply that there is some relevant information that may not be available at that time.

Mr. Wolfe stated that other parts of the regulations discuss ongoing research that will take place between the authorization to construct and the final licensing, so the theory about continuing to obtain information during the entire life of the repository, even after its constructed, is soundly based in the regulations.

Mr. Nataraja stated that the emphasis of the STP is not on the EPA standards, but on the design of the underground facility. The STP mainly addresses how to meet Part 60.133(i), while considering the pre- and post-closure performance objectives.

Committee members voiced concern over adversarial language in the STP and requested that the staff consider changing the wording in some cases. Mr. Lee responded that the sentences in question had been stricken from a later draft.

Dr. Moeller questioned the ability to conduct post-closure monitoring of the repository. Mr. Wolfe stated that "it is the deliberate policy not to condition the finding that you have with reasonable assurance on ongoing monitoring." The reason for this policy is because of the difficulty of predicting over a long time the capability of institutions to engage and carry out monitoring, in addition to the ability to do anything about it after the repository is closed. He added that it could be possible to add a provision for some monitoring after closure for purposes of public confidence and noted that the 1986 proposed rules to implement the EPA standard included a provision for DOE to describe in the license application any plan that it had with respect to postclosure monitoring. After the license is terminated, the NRC's jurisdiction ends. There is also a concern that some types of monitoring could have negative effects upon performance.

Dr. Pomeroy proposed that the Committee hold a working group on the aspects of post-closure monitoring.

Mr. Tanious began his presentation by explaining that the STP was written in response to the results of the staff's review of the SCP and because of comments heard during interactions between DOE and the NWTRB. To the staff, DOE appeared to lack a clearly defined program for investigating processes related to thermal loading.

Mr. Bunting stated that the staff does not believe that the DOE has a well-thought-out approach. The staff is concerned with the need for DOE to understand the effects of fully coupled processes that relate to thermal loading. DOE's time frame for pursuit of the state-of-the-art in this matter will continue up to the time of the closure hearing when the NRC must decide on closure. At that time the regulations call for the application to be updated based on the results of the performance confirmation program.

The staff noted that the 275°C maximum borehole wall temperature that was chosen by the DOE in the SCP is higher than temperatures for any other repository proposed in the world. Swedish and Swiss repositories propose the maximum temperature for the borehole wall to be about 80°C. The effects of these high temperatures on the repository and the waste package may be beyond current scientific understanding. This STP sends notice to the DOE that the burden is on it to prove that it is operating in a temperature regime that is understood.

Besides Part 60.133(i), another regulation that provides support to the STP is Part 60.21 (c)(1)(i)(F) that discusses the contents of the license application. In that application, the staff will request that the DOE provide the anticipated response to the thermal loading on the geologic facility and the waste package.

This requires an understanding on several scales, such as the canister, room, and repository. In addition, the analysis will require an understanding of the impacts of thermal loadings over extended periods of time.

The STP contains three related technical positions. The first is that DOE should develop a defensible approach to demonstrate that the design of the underground facility meets 10 CFR Part 60.133 (i). The second position states that, to the extent practical, DOE should develop models based on mechanistic understanding of the fully coupled thermal, mechanical, hydrological, and chemical behavior. The third position is that DOE should develop approximate models, at least partially coupled, supported by plans for confirmatory measurements during construction and prior to waste emplacement.

The staff stated that at the time DOE submits approximate models, they should also develop plans for in situ and laboratory monitoring and testing and additional model development as appropriate to confirm the adequacy of the earlier models submitted at the time of the license application. Dr. Hinze asked if thought had been given to the use of geological analogs for the development and testing of the models; if not, the technical position should be reviewed again with that in consideration.

The staff stated that wording of position three had been revised after submission of the draft to the Committee. Committee members stated that they preferred the language in the draft before them.

The staff was questioned on the topic of conservatism. Mr. Wolfe stated that there is a deliberate policy not to be too prescriptive, yet to provide sufficient guidance. With respect to words, "to the extent practical," there is no precise answer as to what is practical. The phrase does not relate to a specific meaning in terms of what data are required.

Mr. Alan Barush, DOE, requested to address the Committee. He stated that for the area of concern, the SCP was dated by the time it was published. The chapter dealing with thermal loading was written in 1985 and the SCP was released in 1988. At that time, DOE believed that, if it kept the temperature high for long enough periods, the water could be kept from the canister, thus requiring a simpler canister design of perhaps stainless steel.

The DOE has now changed its thinking. In addition, the new DOE contractor has the responsibility to develop the engineered barrier system.

Mr. Barush stated that the DOE plans to hold a workshop in June on the topic of the engineered barrier system and has asked that outside interests come forward with recommendations for DOE. They

have developed some criteria for evaluation, but no design has been selected nor has DOE settled on a temperature. Now it is considering more site-specific designs that would fit the unsaturated conditions at Yucca Mountain. DOE is also looking at natural analogs to validate models.

The DOE recognizes the difficulties in developing mechanistic models and it plans to back up the models with as much data as possible. Long-term testing is planned that includes corrosion studies.

In reply to a question by Dr. Pomeroy whether there was a need for this STP, Mr. Barush replied that the document will provide a road map that should help the DOE. He believes that the STP supports the DOE effort in attempting to comply with the NRC requirements.

Mr. Tanious then showed a flow chart example of an acceptable approach for demonstrating compliance with Part 60.133(i). Members and consultants commented on the flow chart and recommended adding data from rock mechanics, geology, geochemistry, and hydrology and feedback loops, in case more data are needed.

Dr. Pomeroy commented on the statements in the STP that refer to uncertainties and asked what kind of statistical approach would the staff envision. Mr. Brandshaug stated his belief that first the data would be gathered and a distribution would be determined. Then DOE would perform a sensitivity analysis to establish what variables would be affected by uncertainties in the data. Dr. Pomeroy stated that it would be helpful to explain what was meant by the statistical approach in the STP.

Dr. Steindler stated that the STP implies that a complete description of the near and far field environment is needed; he believes that approach is unreasonable. Mr. Nataraja replied that nothing in the STP is a requirement, but the STP provides methodologies that the staff considers acceptable today. DOE has the option to develop alternate methods or criteria and the staff will review the validity of those.

Dr. Pomeroy also asked if the staff's approach to uncertainties in this STP was consistent with its approach to uncertainties in dealing with the EPA standards as stated in a recent draft Commission paper. The staff followed-up with a brief discussion of how the two documents may differ. Mr. Seth Coplan, NMSS, stated while there was not a consistent effort made to make the two documents the same, the performance assessment staff who are writing the approach to uncertainties report reviewed the STP. The discussion in the Commission paper is at a broader level than that of the STP.

Dr. Pomeroy suggested that the staff add some discussion of residual uncertainties in the STP; Mr. Coplan concurred.

After discussing various editorial problems with the STP, the Committee decided to write a letter to Mr. B. J. Youngblood, Director, HLWM, summarizing the Committee's comments, and suggesting that the staff review the transcript for more detail. The Committee also reserved the right to review the STP again after the public comment period and the staff's incorporation of those comments.

Dr. Steindler questioned whether the STP was really a necessary document. Mr. Bunting stated that the purpose of the STP is to get the DOE to weigh the advantages and disadvantages of the programmatic decision rather than just focusing on the advantages of an approach.

III. DECOMMISSIONING ACTIVITIES AT SELECTED SITES (NON-REACTOR) (Open)

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

Drs. John Austin and John Swift and Messrs. Timothy Johnson, Anthony Huffert and Charles Haughney, NMSS, each provided segments of the presentation.

A. Site Decontamination Management Plan

Mr. Johnson summarized the adapted Site Decontamination Management Plan (SDMP) and noted that the Committee will shortly be receiving a copy. He pointed out that the forty sites selected for inclusion in the SDMP are considered non-routine. For example, a selected site might have large quantities of low-level radioactive contaminated material, be a site where a licensee that has declared bankruptcy (or is likely to), a site where the license has been terminated, or a site where it is not clear who is the licensee. The one common point is that none of the sites is a serious and immediate public health and safety hazard. They do involve potential hazards and they do involve material concentrations in excess of the allowable unrestricted release level. The purpose of the program is to develop an overall consistent strategy to expedite releasing the sites for unrestricted access.

In response to a question from Dr. Steindler, Mr. Johnson noted that the NRC terminates about 300 licenses/year (out of about 8000 licenses for which the NRC is responsible). Dr. Austin noted that the FUSRAP and UMTRA sites are not included in this program; however, sites that buried radioactive materials in the past under now withdrawn Part 20 provisions are included. These provisions were withdrawn in 1981 because the staff believed that there were

insufficient controls over burials occurring under these provisions. For example, licensees did not have to inform the NRC of these actions, and they were not required to keep extensive records.

Mr. Johnson noted that the SDMP sites are rated by four principal categories, the foremost being the associated radiologic hazards. The other three categories are: progress in the cleanup (those with active programs are placed at a higher priority), a clearly identified responsible party (if not clear the site is assigned a higher priority) and Congressional commitments.

Dr. Steindler questioned why sites, where significant cleanup progress had been made, were given a higher priority than those with little progress and was told that such a determination would occur only when all other prioritization categories were evaluated as equal. The underlying driving force is to remove the site from the list of those requiring action.

The staffing for the program was discussed next. It was noted that the staff had requested 25 full time employees (FTE) for FY 1991, but only five had been budgeted. For FY 1992, 22 FTEs have been requested but the outcome of that request is uncertain at this time.

Dr. Hinze asked what was the intended breakdown of FTEs between the regions and headquarters and was told that about eight of the 25 FTEs in the FY 1991 budget request would have belonged to Regions I and III.

Another major section in the SDMP has to do with generic policy issues, such as residual contamination criteria, decommissioning record keeping, termination survey procedures, and reopening of terminated licenses. Seventeen issues were identified, scheduled and milestones laid out for accomplishment within a four-year period.

In addition to dividing the sites into Levels A, B, or C, three major issues are identified in the SDMP: residual contamination criteria (scheduled to be published in March 1991), the timeliness rulemaking (a specific regulation that specifies a certain number of years to do the cleanup after which a strong enforcement action could be taken; this proposed rule package is due to the Commission within the next several months), and the proposed rule for reopening terminated licenses.

Dr. Steindler asked if the EPA could act on its own and bring in former licensees for enforcement action. While EPA could do that, they have also placed former licensees on the National Priorities list of the Superfund.

Dr. Hinze asked whether the staff would go to the Level B sites once the efforts on the Level A sites were completed. Mr. Johnson replied that there is a broad effort underway on all sites but that most resources are currently dedicated to the Level A sites.

Dr. Steindler asked what experience had been gained from each effort so that new projects might benefit. He was told that the most significant finding, perhaps, was that the license reviewers were focusing more attention on handling larger areas of contamination. Higher decommissioning costs will likely result, but it is believed that this early awareness will permit many problems to be handled more effectively prior to the point of actual license termination. Dr. Austin interjected that current regulations require a funding plan at the time of license issuance and that these plans are to be reviewed at every license renewal.

In response to Dr. Steindler's request concerning feedback from "lessons learned," Mr. Johnson noted one example: in the past, thorium and uranium were not considered very hazardous and, therefore, the housekeeping was poor and the contamination became widespread. He agreed that a formal feedback process could be beneficial and that NRC management now recognizes the need to provide the requested resources.

Mr. Huffert presented information on two Chemetron sites (known as the Bert Avenue and the Harvard Avenue sites) located outside Cleveland, Ohio. Both sites involve uranium catalyst cleanup; the potential for mixed waste; a long-duration, on-again, off-again decommissioning/decontamination effort (1975 to present); material that had been dumped per the formerly applicable 10 CFR Part 20.201 provisions; and an owner (Allegheny International) that declared Chapter 11 bankruptcy and subsequently reorganized. The licensee also requested partial releases of the site (several granted) plus a release of the northeastern part of the Bert Avenue site to allow the village of Newburgh Heights (where the sites are located) to construct a sewer line.

As there are no approved Commission residual contamination limits, the 1981 Branch Technical Position limit of 35 pCi/gm of depleted uranium is being applied. The estimated quantities of contaminated soil have increased from about 3000 ft^3 to 180,000 ft^3. Mr. Huffert discussed the contamination and how it was spread. Soil with levels above 100 pCi/gm is now being stored on site and covered with a tarpaulin rather than being shipped to an LLW disposal site. The current decommissioning fund is about $7.5 million. Concern was expressed by several Committee members whether drinking water supplies were being contaminated by leachate. They were told that none of the people in the area use

groundwater supplies; public drinking water is supplied to everyone in the Cleveland area.

Airborne activity is well below Part 20 limits. EG&G is conducting a helicopter survey of the area to identify the presence of any off-site contamination resulting from these activities. (The project manager states that depleted uranium can be detected at the planned flight elevation of 150 feet.

Recent public and Congressional relations activities were also discussed. Mr. Johnson noted that about 100 persons attended the January public meeting.

Once the site characterization report is prepared, it will be reviewed and Oak Ridge Associated Universities (ORAU) will conduct on-site verification surveys.

Dr. Hinze and Messrs. Johnson and Huffert discussed some details of the site characterization effort, including the impacts of seasonal variation. Also discussed were various mechanisms believed to have been associated with the spread of contamination, the nature of the depleted uranium catalyst involved, and the reasons for the widely varying volumes of contaminated material. The staff believes that the limiting consideration for the two Chemetron sites is the future unrestricted use of the surface facilities or land areas, rather than the contamination of groundwater.

Dr. Steindler asked about the realism of the 35 pCi STP level. Mr. Johnson replied that a basis for a standard will be resolved in the development of the residual contamination criteria. It was also indicated that although the staff had experience with DOE on mill tailings, neither DOE nor NRC had "robust" standards for either depleted or enriched uranium.

Mr. Huffert noted that: (a) there may be mixed waste at the site (this should be known when the site characterization report is received); (b) the proposed "timeliness rule" might have been some help at this site as decommissioning activities have been going on for some 20 years, and (c) while the staff and the licensee are keeping EPA informed via quarterly meetings, telephone calls and letters, the effort is not a cooperative venture with either the U.S. EPA or the Ohio EPA (the latter has cognizance). The Ohio EPA, however, will be asked to provide input on any of their possible RCRA or CERCLA concerns.

The Committee agreed that it would consider convening a workshop on acceptable regulatory limits for residual levels of uranium and other natural materials.

B. West Valley Demonstration Project

Dr. Swift and Mr. Haughney addressed the Committee on the activities at the West Valley Demonstration Project (WVDP). The history of the WVDP was reviewed, commencing with the passage in 1980 of the WVDP Act that assigned DOE the primary task of cleanup, made New York State a 10% partner, and assigned informal public health and safety oversight to the NRC. Informal oversight, since DOE is not a licensee, means that the NRC reviews safety analysis reports, reviews relevant site operations and provides decontamination and decommissioning criteria. A Memorandum of Understanding (MOU) between NRC and DOE covers NRC activities.

Both the current high-level and low-level waste activities at the site were presented and the site layout and activity areas described. To date, 11,000 drums of concrete waste have been produced, cold vitrification demonstrations have been performed and construction of the vitrification facility is underway.

Dr. Steindler asked whether the NRC conducts independent tests of the concrete waste and was informed that the NRC does not conduct such tests as their involvement is only with the certification process and the records.

The cleanup responsibilities of the various entities were explained. DOE has no responsibility for the formerly used LLW disposal site and only a limited responsibility for the New York State Energy Research Development Authority (NDA) area. Prime responsibility for those areas lies with New York State. Mr. Haughney further pointed out that the current NRC license for the State was amended so that, when DOE is finished, New York State will submit a suitable application for completing the site decommissioning.

The draft environmental impact statement (EIS) is expected to be submitted in March 1994, with the final environmental impact statement scheduled for issuance a year later. The EIS process will be jointly conducted by DOE and New York State. The NRC is a cooperating agency only insofar as prescribing the decontamination and decommissioning requirements per the WVDP Act.

Dr. Pomeroy requested an explanation of the NRC's actual monitoring activities and was informed that NRC's role is one of reviewing records, reports and logs as well as inspecting and observing a variety of activities. NRC's monitoring aspects basically consist of informal sampling similar to many activities it performs in a traditional licensing role. It was noted by Mr. Haughney that DOE appears to take NRC's role quite seriously, although DOE, not the NRC, has the primary overall public health and safety responsibility for the entire site.

Dr. Steindler questioned whether his impression that NRC does no independent sample gathering and monitoring was correct. (His impression was affirmed.) He also asked what is the role of NRC regarding the sampling wells and was told that it is indirect -- look, examine, and comment, but like NRC's responsibilities in related areas, there is no enforcement power. After some more discussion in this general area of NRC's responsibilities, the session was concluded.

IV. RESPONSE TO SRM ON ADVANTAGES AND DISADVANTAGES OF THE INDIVIDUAL DOSE VS. COLLECTIVE DOSE APPROACH TO DETERMINE RISK FROM A WASTE REPOSITORY (Open)

[Note: Mr. Giorgio N. Gnugnoli was the Designated Federal Official for this portion of the meeting.]

Dr. Moeller introduced a proposed letter to Mr. Robert Bernero, Director of NMSS, which he had prepared with the assistance of Dr. R. Kathren, an ACNW Consultant. Although the revised Staff Requirements Memorandum (SRM), dated April 18, 1991, did not specifically request the Committee for a separate evaluation, Chairman Carr indicated during a meeting with Dr. Moeller on April 22, 1991, that such an evaluation could be useful.

The Committee discussed the need for such an evaluation. The Committee believed that a collective dose evaluation would provide some measure of societal risk from an HLW repository. Although the applicable (although presently remanded) EPA standards only address total radionuclide release limits, such limits are, in essence, directly comparable to placing an upper bound on the collective dose. The discussion focused on the relative advantages of an individual or critical group dose criterion, as opposed to the collective dose approach. Dr. Steindler pointed out that the two approaches were effectively identical, since the critical group usually represents the major dose contribution in the collective dose computation. In effect, if you protect by means of a critical group approach, you have effectively been protective from a collective dose approach. The converse is true, except the extrapolation used in the collective dose estimate makes the collective dose approach more conservative.

The Committee also discussed the relative merits of the International Commission on Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP) positions on truncation of dose computations. Dr. Moeller noted that while the NCRP acknowledges conditions in which truncation of doses below certain thresholds is acceptable, the ICRP recommends against truncation. NRC staff noted that the ICRP recognizes that

the collective dose could be ignored, if the individual doses are very low.

Dr. Moeller briefly reviewed the EPA's approach in setting the release limits in the HLW standards. Dr. Hinze cautioned the uncertainty in the rationale of trying to predict long-term states of society in the assumptions. The Committee noted that documentation of the calculational approaches applied in determining doses, whether individual or collective, would be useful in making the case for licensing in front of the licensing board, but beyond the date of closing, say in the year 2100, the dose estimates would be academic. Measuring whether 100 Ci are released over 10,000 years (unless a catastrophic event occurred) would be impractical, as well as trying to evaluate the resultant dose --individual or collective. Dr. Steindler and Dr. Kathren discussed the difference in uncertainties in estimating individual versus collective doses. Mr. Ray Clark, EPA, pointed that the EPA went to some effort to avoid requiring dose computations by the implementing agencies. The EPA went through various scenarios of releases, dose computations and risk estimates, in order to establish the total radionuclide release estimates.

The Committee then discussed whether other topics in the letter, such as post-closure monitoring and compliance, should be retained. These other topics were thought to be extraneous to the purpose of the letter and were deleted.

After these revisions were made, the Committee voted to approve sending the letter to the Director, NMSS.

V. NRC STAFF APPROACH TO DEALING WITH UNCERTAINTIES IN SUPPLEMENTING EPA'S HIGH-LEVEL WASTE STANDARDS (Open)

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

Mr. Ronald Ballard, NMSS, reviewed the recent history on this subject, noting that in 1985 the Waste Subcommittee of the Advisory Committee on Reactor Safeguards (ACRS) stated that the EPA Standards were too stringent and unworkable, whereas the staff believed that they were implementable.

Dr. David Fehringer, NMSS, led off the detailed technical discussion by noting that Section 1 of the revised draft of the staff's "uncertainties paper," for the first time, provides the NRC staff's analysis of the EPA standards, comparing various alternatives that EPA might have chosen.

The Committee noted that the Commission had charged the staff with dealing with regulatory uncertainties, not with technical uncertainties. Dr. Fehringer noted that the staff did not recognize that distinction as such, but the paper under discussion certainly dealt with technical considerations related to HLW repository regulation.

The draft paper is divided into three sections: the first section is devoted to an analysis of EPA's HLW Standards, the second section identifies the various types of uncertainties and ways to deal with them, and the third addresses the treatment of residual uncertainties. In regard to residual uncertainties, the staff believes that they can be dealt with only through judgment. In this regard, the staff defines two kinds of judgment: (1) technical expert - the information supplied in a very narrow technical area, and (2) decision-maker judgment - that exercised first by the staff and later by a licensing board and the Commission.

Dr. Fehringer pointed out that the paper will not address the derivation of the EPA Standards nor a comparison with other risks and standards because such an explanation has not been requested from the EPA. He further stated that he understood how the standards were derived, even if he did not necessarily agree with the methods used. He perceived that much of the disagreement that others have with the Standards is based on the way EPA derived them and, that the basis is one of technical achievability as opposed to a concept of an absolute acceptable risk.

The staff believes release limits are much easier for the NRC to implement than dose limits or limits on acceptable health effects, since this approach eliminates the review and critique of environmental transport and dosimetry modeling. There is no significant implementation difference between standards based on population protection versus standards based on protection of individuals.

Dr. Steindler questioned why the staff believes that EPA's approach is easier to implement. Dr. Fehringer stated that speculation on how people will live for the next 10,000 years is easy. However, it is extremely difficult if one is to provide conclusive information. At least the geosciences and physical sciences have the potential to shed some scientific light on science related matters, such as seismology, tectonic disturbances, et al.

Dr. Fehringer stated that the repository does not have to perform very well to meet EPA's Standards as only americium and plutonium releases appear to be significantly restricted. Dr. Steindler questioned this conclusion, without reaching mutual concurrence, the discussion was discontinued.

Dr. Pomeroy asked that Dr. Okrent's question on the significance of technetium-99 (Tc-99) be addressed. [The question was based on an analysis provided in a paper by Dr. T. Pigford, University of California, which indicated that this radionuclide would be dominant.] Tc-99 becomes the most significant contributor in Dr. Pigford's paper due to his assumption that actinides are released in only tiny fractions of EPA's limits.

The NRC staff proposal to EPA for an alternate format for the probabilistic portion of the standards will be handled as a separate document that will be distributed along with EPA's Working Draft #3 of 40 CFR Part 191, but will not be incorporated into it. In concluding his remarks, Dr. Fehringer noted that the staff concluded that: (a) EPA's standards can be used to evaluate repository safety, and (b) implementing EPA's standards will be easier than implementing the alternatives that have been proposed.

Dr. Steindler asked whether there were internal staff arguments before reaching these conclusions and was told that there were many. A few of the items debated were named: individual protection versus population protection; the stringency of the proposed standards with some taking the position that 1,000 cumulative health effects is too low a number; the use of the probabilistic format, and the difficulties associated with separating implementability from matters of principle.

Dr. Pomeroy questioned whether the development of a performance assessment (PA) capability reduces uncertainty in the site characterization process versus the uncertainty in evaluating it. The response indicated that the developing PA capability will allow the staff to do iterative evaluations of repository performance from which uncertainties will be identified that will permit site characterization efforts to be directed so as to be most productive. It will also permit the staff to learn where the uncertainties are in the repository performance model.

Dr. Coplan interjected that the use of sensitivity analyses should permit the staff to learn the relative importance of some uncertainties. He also commented that, while one can easily get philosophical when dealing with uncertainties, once one starts going through an analysis a different perspective is obtained.

Drs. Pomeroy, Steindler, Hinze, and Fehringer entered into a discussion on technical-expert and decision-maker judgment and the use of each, including whether and how to combine expert judgments. Dr. Coplan contributed his thoughts on interpretations of phrases, such as: "technical community consensus," "technically preferable" and "will rely strongly." Dr. Pomeroy noted that, based upon working group meetings on the subject, "Expert opinion deals with consensus or non-consensus. It does not deal with the truth."

In response to Dr. Pomeroy's question as to how one distinguishes between alternate technical judgments, the staff suggested that there are two basic criteria, viz: (1) scientifically preferable, and (2) if that first criterion is not obvious, then the more conservative opinion would be selected. It was stated that the staff discussion in the paper represents the best technical description possible, in their opinion, in light of the current state-of-the-art. Deficiencies in the discussion are recognized.

Foreign performance assessment efforts were briefly presented. A spectrum of activities are underway, from efforts similar to those in the U.S. (Sweden and Great Britain), to consequence analyses (Switzerland), to what could be considered a rather trivial analysis (due to salt dome resiliency) for the proposed German repository.

After further discussion on various theories and schools of probability, the Committee commented on the draft paper, paragraph-by-paragraph.

Although much of Section 1 could be deleted, it was generally believed that it contributed worthwhile background information. The "three-bucket" approach was reviewed next. Dr. Fehringer indicated that he understands that the EPA is planning not to incorporate this approach into Working Draft #3 of 40 CFR Part 191 but will include the concept with the mailing and will request separate comment.

Section 1.3, the 10,000 year period of concern, was discussed next. Dr. Steindler pointed out that the purpose of the discussion was not obvious as he was not aware that this time span had been seriously challenged. The potential for a significant release after the 10,000 year cutoff period was discussed with the staff indicating that the purpose of the section is to present not only the pros and cons, but also to recognize that some perceive the 10,000 year cutoff as a negative feature in EPA's standard.

The "three-bucket" approach was discussed in some detail. The ranges of likelihood were presented for NRC's likely, unlikely and very unlikely conditions. EPA's standards restrict releases both by size and by likelihood. Releases greater than one chance in ten are to be no greater than the table of release limits while those less than one chance in ten (but greater than one in 1,000) are allowed to be ten times as large as the table release limit. Those releases that are less likely than one chance in 1,000 are not restricted by the current standards.

The NRC staff proposal outlined in this paper is believed to be quite similar. For the first category, likely conditions, it is

the same while for the second category, unlikely events, the NRC proposes only a consequence limit with no associated probability limit. This would be made workable by use of event-tree methodology from which a mutually exclusive set of scenarios would be produced. If the scenario has a probability approaching one chance in ten, it would be folded into the complementary cumulative distribution function (CCDF) but, if it is in the range of one chance in ten to one in a thousand, it would be restricted only by a consequence limit no greater than ten times the table release limit. The key to the success of this approach is the definition of scenarios.

In response to a question from Dr. Hinze, it was stated that human intrusion would be placed in the middle category as an unlikely event, as it was believed that it is human nature to intrude into banned places. Therefore, while it cannot be ruled out, institutional controls and monuments and markers would make such intrusion unlikely. Such a determination would eliminate it from normal probabilistic assessment. Dr. Hinze pointed out, however, that a qualitative assessment of the probability would be made by such an assessment.

Dr. Hinze noted that this approach was different from the Committee's perspective that placed human intrusion off by itself and, therefore, it would be regarded as a very unlikely event.

Dr. Coplan agreed with Dr. Fehringer, pointing out that there has not been sufficient work yet to place human intrusion into the very unlikely category of events.

Dr. Steindler questioned why human intrusion is considered to be deemed different from groundwater travel time in a fractured porous medium and was told that the latter is a physical system about which scientific information can be developed as opposed to human intrusion that is speculative and judgmental.

Dr. Hinze questioned why numbers such as 0.001 are used as they seem to suggest a preciseness that is lacking. These numbers were used by the NRC staff since they were the same numbers used by EPA. Scenario development was discussed further. It was noted that, in principle, 10^6 mutually exclusive scenarios might result but that by combining some events or perhaps performing a consequence and/or probability analysis or designing a facility to be particularly resistant to certain types of events, one could lower the number of events to a quantity capable of being handled. Dr. Fehringer pointed out that his assumption was ten or less events with less than 1,000 scenarios. Dr. Steindler observed that tradeoffs and combinations of events and scenarios merely trade off uncertainties.

Mr. Ballard indicated that the staff has a subtask group to focus on scenarios and the staff is also investigating the possibility of a rulemaking on scenarios. Dr. Steindler responded that he believes there are flaws in the staff's approach. Dr. Fehringer noted that human intrusion is in the middle (unlikely) category because that is where the Commission placed it when Part 60 was being developed. He noted that it is still possible that the Commission could change its mind and state that human intrusion is not considered credible.

Dr. Steindler commented that it was not the role of the staff to reduce or eliminate uncertainties -- it was a function of the applicant. He believes that the staff should provide a methodology or philosophy on how to deal with the residual uncertainties and that it is clearly the staff's responsibility to reduce regulatory uncertainties.

Considerable discussion followed as to how interactions with DOE and the EPA may reduce uncertainties and how such statements in the paper are of a benefit to the Commissioners. Dr. Coplan noted that one reason for such observations in the paper is an effort by the staff to convey that much has, is, and will be done to narrow the uncertainties and that, furthermore, the problem is not as bad as many might perceive it.

Dr. Hinze suggested that the document include research as an area that will assist in the reduction of uncertainties.

Mr. Ballard noted that he believed this paper documents the NRC's position and provides a baseline for the staff as well as others. Dr. Steindler concurred on the value of a document but believed this paper was too precise for that purpose. He suggested that an overall strategy paper be considered with subsequent documents focusing on various specific aspects.

Effort is underway by the staff on a performance assessment strategy document that prescribes how PA will be approached, the role of research, etc. It could be issued in the near future.

Dr. Pomeroy asked whether the staff intends to develop guidance on how to use expert judgment. After some discussion, the staff agreed that it would be useful if the Committee wrote a letter recommending that guidance be issued on the use of expert judgment.

Drs. Pomeroy, Steindler and Coplan discussed the applicability of NUREG-1150 to this issue. Dr. Pomeroy observed that, during the upcoming June 1991 working group meeting on expert judgment, several presenters will discuss NUREG-1150 and its relevance.

VI. EXECUTIVE SESSION (Open/Closed)

A. REPORTS AND MEMORANDA

Individual and Collective Dose Limits and Radionuclide Release Limits (Report to Mr. Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards, dated April 29, 1991.)

Consideration of Human Intrusion in the Licensing of a High-Level Waste Repository (Report to Chairman Carr, dated April 29, 1991.)

Program Plan for the Advisory Committee on Nuclear Waste (Report to Chairman Carr, dated April 29, 1991.)

Draft Staff Technical Position on Underground Facility Design -- Thermal Loads (Memorandum to Mr. B. J. Youngblood, Director, Division of High-Level Waste Management, from Mr. Raymond Fraley, dated April 29, 1991.)

B. HUMAN INTRUSION FOR A HIGH-LEVEL WASTE REPOSITORY (Open)

[Note: Mr. Giorgio N. Gnugnoli was the Designated Federal Official for this portion of the meeting.]

Dr. Moeller opened the discussion of this proposed report to the Commission, by briefly reviewing the concerns of the Committee and Dr. Okrent with respect to the comparability of NRC treatment of nuclear power plant sabotage and the probabilistic treatment of human intrusion (HI) at an HLW repository. Dr. Moeller suggested that, in the transmittal letter, the Committee characterize the report as portraying one perspective (among many possible ones) for treating acts of commission, in a way that is not purely probabilistic. This could be a type of "lessons learned" letter, which does not proscribe one approach in favor of another.

Dr. Hinze restated his concerns regarding the sharp restriction of sabotage and HI as simply acts of commission, without addressing the two in terms of whether they were inadvertent or deliberate. He also brought up Dr. Okrent's concern that HI and inadvertent drilling were too different, and so should be treated differently. Dr. Pomeroy asked whether it would be possible to address Dr. Okrent's two main comments; those being:

- The intent behind the acts of sabotage and HI are so different that it would be questionable to compare them in the same context.

- The NRC treatment of sabotage (at nuclear power plants) is not necessarily the best way to deal with the potential of sabotage on a risk basis.

Mr. Steven Mays, ACRS/ACNW Senior Fellow, noted that a probabilistic risk assessment (PRA) could be performed for a single act of commission in terms of a single consequence, but to deal with the possibilities for an act of commission in an integrated PA approach (as recommended by EPA) would be meaningless. Mr. Mays suggested that the scenarios and possibilities would be too many to handle quantitatively in a PRA.

Dr. Okrent, who was not present for this discussion, had also indicated to Mr. Mays that there was an effort underway in the NRC Office of Nuclear Regulatory Research (RES) directed to treatment of acts of commission and that this should be reflected in the report. Mr. Mays indicated that he had taken Dr. Okrent's suggestion, but had found that the scope of the acts of commission being considered was too limited, and that many of these efforts were at very early stages and thus not useful for the report at this time.

The Committee tried to come to consensus on whether the report should present conclusions or whether the report should be merely a descriptive document. Following this discussion, Mr. Mays offered to make some changes, which would caveat the comparison of the two acts, so as not to infer that this comparison was the definitive study on such comparisons. Also noted was that the report reflected the current situation and left to the reader how far to take such a comparison. With these revisions, the Committee voted to approve the transmittal of the report to the Commission.

C. REVISING 10 CFR PART 61 RELATIVE TO ATTENTION TO LEACHING RESISTANCE OF THE LOW-LEVEL WASTE FORM (Open)

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

Dr. Steindler opened the discussion by reviewing the recent history related to this issue, commencing with the Committee's report to Chairman Carr, dated September 6, 1990, entitled "Revision 1 of Draft Technical Position on Waste Form." He noted two basic relevant questions. Is protection of

groundwater adequately covered in Part 61? Considering the non-homogenous nature of LLW wastes, is it possible to specify waste form/permissible leach rates?

Mr. Paul Lohaus and Dr. Michael Tokar, NMSS, and Dr. Edward O'Donnell, Philip Reed and Melvin Silberberg, RES, discussed this issue with the Committee. They did not make formal presentations.

Mr. Lohaus noted that a meeting has been tentatively set for May 23, 1991, when RES intends to bring in various staff and contractors to "brainstorm" the issue of radionuclide migration. He noted that his memorandum to Mr. Larson, dated March 11, 1990, addressed groundwater protection, human intrusion prevention into LLW disposed of at a facility licensed in accordance with Part 61, and airborne releases from such a facility.

In response to Dr. Steindler's question on whether groundwater protection for LLW is an identifiable problem, Mr. Silberberg noted:

a. the heterogeneity of LLW is a concern,
b. RES is just beginning to develop its thoughts on the needs of a research program,
c. insofar as far-field transport, it is recognized that some additives retard far-field transport while some enhance it,
d. site variabilities must be considered, and
e. the proposed FY 1992 research program includes chemistry-related studies.

It was observed that the LLW and RCRA philosophies, insofar as groundwater travel time considerations, appear to be similar, whereas the underlying high-level waste system philosophy specifically addresses retention of the nuclides within the controlled area for a sufficient period during which they become innocuous.

Dr. Tokar noted that since Part 61 was written there have been significant changes in LLW forms and volumes. For example, LLW incinerators are now in operation that could further significantly change volumes and form. He further noted that it would take some time to evaluate properly what should be done in this particular regulatory arena.

Dr. Steindler, while agreeing with these comments, noted that the most recent Commission SRM's SECY Suspense date (June 28, 1991) is a factor in the Committee's pursuit of a proper response. He also stated that his list of questions, which

were separately provided to the staff, were meant to provide a basis for building background documentation that would assist in the formulation of an answer to the SRM.

Mr. Lohaus noted that the staff, in addition to holding the May 23rd meeting and further addressing the broader questions related to groundwater protection, is developing a new LLW performance assessment Regulatory Guide that is scheduled for issuance by the end of Fiscal Year 1992.

Mr. Reed then discussed some related studies that are being conducted by RES and suggested his willingness to discuss them in more detail in the future.

Dr. Hinze suggested that consideration be given to inviting some low temperature geochemistry consultants to the May 23rd meeting. He also suggested that consideration be given to inviting some state representatives to the meeting, in light of the subjects' relevance to their efforts to locate an LLW disposal site.

D. WORKING GROUP REPORT ON INTEGRATION OF GEOPHYSICS INTO SITE CHARACTERIZATION OF A HIGH-LEVEL WASTE REPOSITORY (Open)

The scheduled Working Group Report was not presented due to insufficient time. Dr. Moeller recommended that the report be rescheduled for the next meeting.

E. ACNW FOUR-MONTH PLAN (Open)

The Committee prepared and issued to the Commission its four-month plan for the period May-August 1991.

F. THREE-MONTH SCHEDULE (Open)

Dr. Moeller requested that the ACNW members be polled every month to identify tentative dates of availability during the following three months. This information will be used by the ACNW members and staff to plan upcoming meetings.

G. COMMITTEE ACTIVITIES (Closed)

The Committee met in a closed session to discuss matters that pertain to the ACNW staff and organization.

H. ACNW FUTURE ACTIVITIES (Open)

The Committee discussed its planned visit to the Center for Nuclear Waste Regulatory Analyses (CNWRA) in San Antonio, Texas, scheduled for June 26-28, 1991. The Committee will be briefed on the status of the Systematic Regulatory Analysis program and will receive an update on other activities of the Center, such as PRA computer codes and tectonic modeling. The Committee further defined its areas of interest.

The Committee agreed to have a Working Group on residual contamination clean-up criteria. Dr. Moeller will be the Chairman.

The Committee agreed to have a Working Group on post-closure monitoring of an HLW repository and other related issues. The ACNW staff will invite representatives from EPA and NRC to brief the Committee on various aspects associated with post-closure monitoring. The date for this meeting is to be determined. Dr. Moeller has been tentatively selected to be the Chairman.

The Committee agreed to have a Working Group on an alternative probabilistic format for the containment requirements in EPA's high-level waste standards. Processes and events potentially affecting a repository would be divided into three categories (likely conditions, unlikely conditions, and very unlikely conditions). Dr. Steindler will be the Chairman.

Mr. Fraley noted that review of the first Regulatory Guide for implementing the new 10 CFR Part 20 (Standards for Protection Against Radiation) will be scheduled for July. [Advanced copies of three guides were received on April 25, 1991, for the ACRS and ACNW to begin their respective reviews. Members will be sent a copy of Regulatory Guide 8.N8, Assessing External Doses from Airborne Radioactive Materials.]

The Committee expressed interest in being briefed on the current U.S. Department of Energy (DOE) research program regarding the HLW repository site characterization.

The Committee inquired about a briefing on the Oak Ridge Study, "Mortality Among Workers at Oak Ridge National Laboratory -- Evidence of Radiation Effects in Follow-Up Through 1984" by the principal investigators as well as representatives of National Institutes of Health.

The Committee agreed not to schedule briefings on the decommissioning of the Hanford Production Reactors and in-place vitrification. The Committee also stated that further review of the LLW Uniform Shipping Manifest by the Committee was not necessary.

Dr. Moeller suggested that Ms. Charlotte Abrams attend the American Geophysical Union meeting in Baltimore, Maryland, to hear the session on the Szymanski Model as well as other sessions on related subjects. Dr. Hinze noted that he will also attend the meeting.

The American Society of Mechanical Engineers has invited the Committee to make a presentation during the plenary session of its mixed wastes meeting to be held in Baltimore, Maryland, on August 26-29, 1991. The Committee agreed to accept the invitation. Dr. Moeller will summarize Committee recommendations on mixed wastes (ACNW report dated February 28, 1991).

The Board of Radioactive Waste Management, National Academy of Sciences, announced tentative plans to have the Electric Power Research Institute convene a Workshop on High-Level Waste Disposal Criteria about September 23-26, 1991. A major topic of discussion is likely to be the technical bases for 40 CFR Part 191. Dr. Moeller requested that members express their interest in attending should it be held.

The DOE is sponsoring a Workshop on Engineered Barrier Systems in Denver, Colorado, on June 18-20, 1991. Dr. Moeller suggested that this meeting might be of interest to the members and, if so, someone should attend, such as Dr. Paul Shewmon.

The Idaho National Engineering Laboratory (INEL) has met a major milestone in the Bin Test Program for the Waste Isolation Pilot Plant (WIPP) facility. The Bin Test Program is designed to produce data to be used during the five-year test phase of transuranic waste disposal at WIPP.

Dr. Moeller noted that mishaps continue to be reported of inadvertent discovery of radioactively contaminated materials or leaking waste containers. A summary of the event reports will be collated and provided to the members.

Dr. Moeller concurred with Mr. Fraley's recommendation that ACNW should use consultants to cover especially important meetings, conferences, and symposia that ACNW members/staff cannot attend. The number of ACNW consultants will need to be expanded to provide this capability. Consultants may be required to provide a report on the meeting, conference, or symposium content.

The 30th ACNW meeting was adjourned at 4:45 p.m. on April 24, 1991.

APPENDIX I: MEETING ATTENDEES

30TH ACNW MEETING
APRIL 23-24, 1991

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

ACNW CONSULTANT			
Mr. Ronald Kathren	X	X	

NRC STAFF		1st Day	2nd Day	
John Austin	NMSS	X		
Ronald Ballard	NMSS	X	X	
Richard Bangart	NMSS	X		
Susan Bilhorn	OCM/KR		X	
Joseph Bunting	NMSS	X		
Donald Chery	NMSS		X	
Seth Coplan	NMSS	X	X	
Norman Eisenberg	NMSS	X	X	
Abraham A. Eiss	NMSS	X	X	
Charles Haughney	NMSS	X		
Joseph Holonich	NMSS	X		
Anthony Huffert	NMSS	X		
Timothy Johnson	NMSS	X		
Ken Kalman	NMSS		X	
John Linehan	NMSS	X		
Paul Lohaus	NMSS		X	
Donald Loosley	NMSS		X	
Maria Lopez-Otin	GPA		X	
Daniel Martin	NMSS	X		
Peter McLaughlin	NMSS	X		
Mysore Nataraja	NMSS	X	X	
Robert Neel	NMSS		X	
Edward O'Donnell	RES		X	

NRC STAFF		1st Day	2nd Day	
Helen Pastis	NRR	X	X	
Phillip R. Reed	RES		X	
Melvin Silberberg	RES		X	
Jerry Swift	NMSS	X		
Naiem Tanious	NMSS	X	X	
Michael Tokar	NMSS		X	
John Trapp	NMSS		X	
Michael Weber	OCM/KC	X		
Rex Wescott	NMSS		X	
James Wolf	OGC	X	X	
B. J. Youngblood	NMSS		X	

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

Bob Adler	CNWRA
Paula Austin	SAIC
Margo Barron	NUS Corporation
Alan Berusch	DOE Hq
John A. Blair	TRW/Fluor Daniel
Terje Brandshaug	Itasca Consult. Group Inc.
Asadul H. Chowdhury	CNWRA
Ray Clark	EPA
Ellen Ziegler Coombs	SAIC
David Fenster	Weston
Alex Glenn	Newman & Holtzinger
James M. Gruhlke	EPA
R. E. Jackson	Weston/DOE Hq
Barry Koh	Chemetron
Paul M. Krishna	Battelle
John Long	NUS Corporation
Ted McIntosh	DOE Hq
Homi Minwalla	Weston/Jacobs Engineering
Andy Muir	ICF Technology
Cliff Noronha	Weston
Ricardo Palabrica	Weston/UE&C
Jack Parry	NWTRB
Pat L. Plante	CNWRA
David Rasmussen	Weston
Leon Reiter	NWTRB
Roles	DOE
Dan Sullivan	DOE
Sandra Szalinski	West Valley Nuclear Services Co.
Ray Wallace	USGS Hq/DOE Hq

APPENDIX II. FUTURE AGENDA

31st ACNW Committee Meeting May 22-23, 1991 (Tentative Agenda)

EPA HLW Repository Standards (Working Draft #3) - The Committee will be briefed on Working Draft #3 of the Environmental Protection Agency's 40 CFR Part 191, High-Level Waste Repository Standards, if available.

Leaching Resistance of LLW Waste Form - The Committee will continue its discussion on a response to a recent Staff Requirements Memorandum (SRM) concerning a proposed revision of Part 61 with regard to leaching resistance of the low-level waste form and groundwater protection requirements.

Uncertainties in Implementing the EPA's HLW Radiation Protection Standard - The Committee will continue discussions that address dealing with uncertainties in association with the implementation of the EPA HLW repository standards.

Working Group Report on Integration of Geophysics into Site Characterization of a High-Level Waste Repository - The Working Group Chairman will report on the importance and advantage of, and potential results from, geophysical testing methods as those methods apply to the identification of possible adverse conditions at an HLW site.

State of South Carolina - The Committee will be briefed by representatives of the State of South Carolina on the implementation of its agreement State Program.

Trip Reports - The Committee will hear from members who attended the Second Annual International High-Level Radioactive Waste Management Conference and members who participated in the field trip to Lunar Crater.

Digital Data Set - The Committee will be briefed on a digital data set prepared for the Yucca Mountain Site.

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

Working Group Meetings

Expert Judgment in Performance Assessment of a Geologic Repository June 18-19, 1991, 7920 Norfolk Avenue, Bethesda, MD, 8:30 a.m., Room P-110 - The Working Group will continue the examination of methods for eliciting expert judgment. The meeting will focus on the actual mechanics of elicitation. This includes questions on

who will identify and select the experts, as well as how the selected experts are trained and how their opinions are aggregated. Human intrusion will serve as the reference example in relating the elicitation process to a real and useful application. Participants will include normative experts, as well as NRC and DOE staff and consultants involved with Yucca Mountain and WIPP.

Geologic Dating (Date to be determined) - The Working Group will review and discuss the problems and limitations associated with the various quaternary dating methods to be used in site characterization of an HLW repository.

Residual Contamination Clean-up Criteria (Date to be determined) - The Working Group will review, discuss and make recommendations regarding the clean-up criteria and clean-up levels for unrestricted use at contaminated sites that are or have been under NRC license.

Post-closure Monitoring (Date to be determined) - The Working Group will discuss post-closure monitoring of an HLW repository and other related issues. The ACNW staff will invite representatives from EPA and NRC to brief the Committee on various aspects associated with post-closure monitoring.

Alternative Probabilistic Format for the Containment Requirements in EPA's HLW Standards (Date to be determined) - The Working Group will discuss the division of the processes and events (likely conditions, unlikely conditions, and very unlikely conditions) that potentially affect a repository.

APPENDIX III. DOCUMENTS RECEIVED

A. Documents Received from Presenters and ACNW Staff

AGENDA ITEM NO.	DOCUMENTS
1	Chairman's Report
	1. Recent Events of Possible Interest to ACNW Members, dated April 19, 1991, by Dade W. Moeller
2	Preliminary Draft - "Staff Technical Position on Underground Facility Design - Thermal Loads"
	2. Staff Technical Position on Underground Facility Design -- Thermal Loads, dated April 23/24, 1991 [Viewgraphs]
3	Decommissioning Activities at Selected (Non-Reactor) Sites
	3. Site Decommissioning Management Plan Presentation to the Advisory Committee on Nuclear Waste, undated [Viewgraphs]
	4. Decommissioning Chemtron Corporation's Harvard Avenue and Bert Avenue Sites Presentation to Advisory Committee on Nuclear Waste, undated [Viewgraphs]
	5. Clean Up at West Valley Presented by Jerry Swift, NMSS, dated April 23, 1991 [Viewgraphs]
4	Response to SRM on Advantages and Disadvantages of the Individual Dose Vs. Collective Dose Approach to Determine Risk from a Waste Repository
	6. Meeting Handout that includes: • Memorandum to James Taylor and Dade Moeller from Samuel Chilk, dated March 22, 1991 (Revision 2), re Staff Requirements -- Periodic Meeting with ACNW, 2:00 p.m., Friday, March 22, 1991, Commissioners' Conference Room • Memorandum to ACNW Members from Howard Larson, dated April 18, 1991, re Uncertainties Paper -- HLW; Individual vs. Collective Dose Considerations, with attachment [Official Use Only]
	7. Meeting Handout that includes: • Memorandum to Dade Moeller from Giorgio Gnugnoli, dated April 18, 1991, re NRPB Consultative Document on Radiological Protection Objectives for Land-Based Disposal of Solid Radioactive Wastes, with attachment
	8. Optimization and Decision-Making in Radiological Protection: A Report of a Task Group of Committee 4 of the International Commission on Radiological Protection, ICRP Publication 35, Pergamon Press, pgs. 37-40

6 NRC Staff Approach to Dealing with Uncertainties in Supplementing EPA's High-Level Waste Standards

9. Uncertainties in Implementing the EPA HLW Standards, presented by Daniel Fehringer, dated April 24, 1991 [Viewgraphs]
10. 1C-14 Release and Transport from a Nuclear Waste Repository in an Unsaturated Medium, by W.B. Light et al, dated June 1990, LBL-28923, Lawrence Berkeley Laboratory, University of California
11. Transport of Gaseous C-14 from a Repository in Unsaturated Rock, by W.B. Light et al, dated September 1990, LBL-29744, Lawrence Berkeley Laboratory, University of California

7 Human Intrusion Paper by Steven Mays

12. Comparison of Techniques for Assessing Nuclear Power Plant Protection Against Sabotage and High Level Waste Repository Protection Against Human Intrusion, by Steven Mays, dated April 1991

8 Anticipated ACNW Activities

13. Memorandum to ACNW Members from Charlotte Abrams, dated April 24, 1991, re ACNW Trip to the Center for Nuclear Waste Regulatory Analyses

B. Meeting Notebook Contents Listed by Tab Number

TAB CONTENTS

1 Chairman's Report

1. Introductory Statements by ACNW Chairman for the 30th Meeting, dated April 23-24, 1991
2. Items of Current Interest, dated April 11, 1991

2 Preliminary Draft - "Staff Technical Position on Underground Facility Design - Thermal Loads"

3. Status Report, dated April 23, 1991
4. Memorandum to ACNW Members from Charlotte Abrams, dated April 4, 1991, re Preliminary Draft Staff Technical Position on "Underground Facility Design - Thermal Loads", with attachment
5. U.S. Department of Energy Site Characterization Plan - Yucca Mountain Site, Nevada Research and Development Area, Nevada: Volume I, Part B, pages

8.3.2.2-65 to 8.3.2.2-75, December 1988

6. Objection 1, Comments 56 and 58, and Question 17 of NUREG-1347, "NRC Staff Site Characterization Analysis of the Department of Energy's Site Characterization Plan, Yucca Mountain Site, Nevada," undated
7. Issue 3 from First Report to the U.S. Congress and the U.S. Department of Energy, Nuclear Waste Technical Review Board, pages 40-41, 1990
8. Staff Technical Position on Underground Facility Design - Thermal Loads by Joseph Holonich, Mysore Nataraja and Naiem Tanious, April 23-24, 1991 [Viewgraphs]

3 Decommissioning Activities at Selected (Non-Reactor) Sites

9. Status Report, dated April 23-24, 1991
10. Memorandum to Dade Moeller from James Taylor, dated September 28, 1990, re ACNW Review of Other Than 10 CFR Part 50 Licensees
11. Site Decommissioning Management Plan (SDMP) Appendix A description of Chemtron Corporations' Bert Avenue Facility, undated
12. SDMP Appendix A description of Chemtron Corporation's Harvard Avenue Facility, undated
13. ACNW Report to Chairman Zech, dated January 26, 1989, re West Valley Demonstration Project
14. Memorandum to ACNW Members and Staff from Richard Major, dated November 7, 1989, re Trip Report to the West Valley Demonstration Project, October 26, 1989
15. Excerpt from the Transcript of the ACNW Meeting with NRC Commissioners on February 21, 1990, pgs. 4-7
16. Memorandum to Paul Pomeroy from Howard Larson, dated November 21, 1990, re West Valley Demonstration Project, with attachments
17. Memorandum to Paul Pomeroy from Howard Larson, dated February 19, 1991, re West Valley Demonstration Project Meeting, December 18, 1990, with attachment
18. SECY-88-257, "West Valley Demonstration Project," dated September 13, 1988

4 Response to SRM on Advantages and Disadvantages of the Individual Dose Vs. Collective Dose Approach to Determine Risk from a Waste Repository

19. Status Report, undated
20. Memorandum to Chairman Carr/Commissioners from Samuel Chilk, dated March 27, 1991, re Staff Requirements Memorandum, with attachment
21. Excerpt from the Transcript of the Commission Meeting with ACNW on March 22, 1991, pgs. 52-73

22. ACNW Report to Chairman Carr, dated January 29, 1991, re Guidance on Limits on Doses and Risks to Individual Members of the Population
23. Letter to Frank Parker from Richard Guimond, dated December 4, 1990, re the National Research Council's Board on Radioactive Waste Management paper entitled "Rethinking High-Level Radioactive Waste Disposal," with attachment
24. Article from Bundesanzeiger, No. 126a, dated July 1985 on "Possibilities and Limits of the Application of the Collective Dose (A Recommendation of the Radiological Protection Commission)" [English Translation]
25. Excerpt from the IAEA Board of Governor's "Safety Principles and Technical Criteria for the Underground Disposal of HLWs." Sections 3.2.1 - 3.2.3, undated, pgs. 11-14
26. Concepts of Collective Dose in Radiological Protection, by Prof. Bo Lindell, Nuclear Energy Agency, OECD, November 1984
27. SECY-91-040, Interactions with EPA Related to EPA's Remanded High-Level Waste Standards, dated February 12, 1991

6 NRC Staff Approach to Dealing with Uncertainties in Supplementing EPA's High-Level Waste Standards

28. Status Report, dated April 24, 1991
29. Memorandum to ACNW Members from Howard Larson, dated April 4, 1991, re HLWM Uncertainties
30. Letter to Richard Guimond, EPA, from Robert Browning, NRC, dated August 27, 1990, re NRC Comments on Working Draft #2 of U.S. EPA's HLW Standards, with attachment
31. ACNW Report to Chairman Carr, dated January 29, 1991, re Guidance on Limits on Doses and Risks to Individual Members of the Population
32. ACNW Report to Chairman Carr, dated January 29, 1991, re Stringency of U.S. Environmental Protection Agency High-Level Radioactive Waste Repository Standards
33. Disposal of Radioactive Waste: Can Long-Term Safety Be Evaluated? An International Collective Opinion published by OECD and IAEA, Paris, 1991

7 Human Intrusion for a High-Level Waste Repository

34. Status Report, dated April 23-24, 1991
35. Comparison of Techniques for Assessing Nuclear Power Plant Protection Against Sabotage and High Level Waste (HLW) Repository Protection Against Human Intrusion by Steven May, March 1991

36. Memorandum to ACNW Members from Raymond Fraley, dated March 22, 1991, re D. Okrent's Comments on Steve Mays' Report, with attachments

8 Anticipated ACNW Activities

37. Set Agenda for 31st Meeting on May 22-23, 1991
38. Agenda Items through August 1991, undated
39. Other Topics to Be Scheduled, undated
40. Memorandum to Raymond Fraley from James Blaha, dated April 5, 1991, re Proposed Agenda Items for the ACRS and the ACNW, with attachment
41. Memorandum to ACNW Members from Richard Major, dated April 11, 1991, re ACNW Staff's Research Projects ("Fellowship Program" Items)

9 ACNW Working Group Meeting

42. Schedule and Outline for Discussion, ACNW Working Group Meeting on Geophysical Testing Methods for Characterization of a HLW Repository Site in Tuff

10 Response to a SRM Related to Revising 10 CFR Part 61 Relative to Attention to Leaching Resistance of the Low-Level Waste Form

43. Status Report, dated April 23, 1991
44. Memorandum to Commission from Samuel Chilk, dated March 27, 1991, re Staff Requirements Memorandum, with attachment
45. ACNW Report to Chairman Carr, dated September 6, 1990, re Revision 1 of Draft Technical Position on Waste Form
46. Memorandum to Howard Larson from Paul Lohaus, dated March 11, 1991, re Response to Request for Information on Leachability and Groundwater Protection, with attachment

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

May 30, 1991

NOTE TO: Donald H. Lanham, Acting Chief
Docketing and Document Control Desk Section
Document Control Branch

FROM: Ethel M. Barnard
Advisory Committee on Nuclear Waste

SUBJECT: PLACEMENT OF "FULL TEXT" ACNW DOCUMENTS ON NUDOCS

In accordance with direction from Jim Blanton, I have attached the following documents for "full text" processing through the NUDOCS system:

ACNW-0028 - Wkg Grp Meeting on Mixed Wastes, 12/11/90
ACNW-0029 - 26th ACNW Meeting, 12/12-13/90
ACNW-0030 - 27th ACNW Meeting, 1/23-25/91
ACNW-0031 - Wkg Grp Mtg on Use of Expert Judgment 1/25/91
ACNW-0032 - 28th ACNW Meeting, 2/21-22/91
ACNW-0033 - 29th ACNW Meeting, 3/20-22/91
ACNW-0034 - 30th ACNW Meeting, 4/23-24/91
ACNWR-0049 - Moeller ltr 3/26/91, Staff Tech Position on Reg. Considerations...Exploratory Shaft Fac.

Also enclosed is a 3 1/2" diskette containing the "electronic text" of the documents. The documents are in "WORDPERFECT" format. Your signature in the space below, will serve as confirmation of receipt of the "Hard Copy" and "Electronic Copy". Please return a copy of this note to me at Mail Stop P-315. If you have any questions concerning this matter, please feel free to contact me on x27691.

EMB

Ethel M. Barnard, ACNW

Received by Donald H. Lanham:

Signature: DCL Date: 6/3/91

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

May 30, 1991

MEMORANDUM FOR: Jim McKnight
Document Control Systems

FROM: Ethel Barnard
Advisory Committee on Nuclear Waste

The attached ACNW Documents are being provided to you for listing on the accessions list. Please forward to the Public Document Room.

Attachments:
As Stated

ACNW MINUTES AND CONSULTANT REPORTS

(PDR 053091)

1. ACNW-0028 WORKING GROUP MEETING ON MIXED WASTES, 12/11/90

2. ACNW-0029 26TH ACNW MEETING, 12/12-13/90

3. ACNW-0030 27TH ACNW MEETING, 1/23-25/91

4. ACNW-0031 WORKING GROUP ON USE OF EXPERT JUDGMENT 1/25/91

5. ACNW-0032 28TH ACNW MEETING, 2/21-22/91

6. ACNW-0033 29TH ACNW MEETING, 3/20-22/91

7. ACNW-0034 30TH ACNW MEETING, 4/23-24/91

8. ACNWS-0027 Moeller ACNW ltr 2/15/91 to Carr NRC, Summary Report - Twenty-Seventh Meeting of the ACNW, January 23-25, 1991

9. ACNWS-0028 Moeller ACNW ltr 3/12/91 to Carr NRC, Summary Report - Twenty-Eighth Meeting of the ACNW, February 21-22, 1991

10. ACNWS-0029 Moeller ACNW ltr 4/10/91 to Carr NRC, Summary Report - Twenty-Ninth Meeting of the ACNW, March 20-22, 1991

11. Fraley ACNW Memo 2/15/91 to Taylor EDO, 27th ACNW Meeting Follow-Up Items

12. Fraley ACNW Memo 3/8/91 to Taylor EDO, 28th ACNW Meeting Follow-Up Items

13. Fraley ACNW Memo 4/10/91 to Taylor EDO, 29th ACNW Meeting Follow-Up Items

14. Fraley ACNW Memo 5/17/91 to Taylor EDO, 30th ACNW Meeting Follow-Up Items

15. Fraley ACNW Memo 4/3/91 to Hoyle ACMO, Quarterly Report on Closed Meetings of the Advisory Committee on Nuclear Waste

16. ACNWR-0049 Moeller ACNW ltr 3/26/91 to Bernero NMSS re Staff Technical Position on Regulatory Considerations in the Design and Construction of the Exploratory Shaft Facility