



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D. C. 20566

May 22, 1990

MEMORANDUM FOR: James M. Taylor
Executive Director for Operations

FROM: *Raymond F. Fraley*
Raymond F. Fraley
Executive Director, ACNW

SUBJECT: 19TH ACNW MEETING FOLLOW-UP ITEMS

Based on discussions regarding methods for improved implementation and follow-up of ACNW recommendations, a summary of Actions, Agreements, Assignments, and Requests made during each ACNW meeting will be sent to your office following each meeting.

Attached is a list of the requests made at the 19th ACNW meeting, April 26-27, 1990.

Those items in the list "Actions, Agreements, Assignments, and Requests" that do not deal with requests made of the NRC Staff or that are not pertinent to NRC Staff activities have not been included in this follow-up list.

Attachment: As stated

cc. H. L. Thompson, EDO
J. L. Blaha, EDO
S. J. Chilk, SECY
E. J. Jordan, AEOD
R. M. Bernero, NMSS
T. E. Murley, NRR
E. S. Beckjord, RES
A. L. Eiss, NMSS
H. Pastis, NRR
M. E. Lopez-Otin, OCM/TR
M. V. Federline, OCM/KC
J. Kotra, OCM/JC
R. MacDougall, OCM/FR
S. Bilhorn, OCM/KR
M. Weber, OCM/KC

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ACTIONS, AGREEMENTS, ASSIGNMENTS, AND REQUESTS
19TH ACNW MEETING - April 26-27, 1990

REPORTS, LETTERS AND MEMORANDA

1. Critique of the Environmental Protection Agency's Standards for Disposal of High-Level Wastes (See Attachment 1)

The Committee provided comments on the standards with emphasis on (a) the need for the use of a hierarchical structure in the organization of the standards, (b) structuring the standards as to apply to the disposal facility as a system, (c) the limitations on the application of PRA methodology, and (d) the desirability of clearly separating out the impacts and assessments of human intrusion, thus permitting this contributor to risk to be directly addressed.

2. Program Plan for the Advisory Committee on Nuclear Waste (See Attachment 2)

The Committee provided its program plan for the activities that the Committee expects to engage in during the next four months.

3. Waste Confidence Decision Review (See Attachment 3)

The Committee endorsed the findings of the Waste Confidence Review Group. The Committee suggested that consideration be given to adding a brief discussion to the statement of the findings of the Review Group which would describe the criteria that would be used to prompt a reevaluation of the current findings sooner than the scheduled ten year review cycle.

ACTIONS, AGREEMENTS, ASSIGNMENTS AND REQUESTS

4. Status Report on Characterization of the Yucca Quaternary Regional Hydrology Study Plan

The Committee was briefed by the NRC staff on the status of the NRC staff's review of the DOE Study Plan for the Characterization of the Yucca Mountain Quaternary Regional Hydrology. Dr. Moeller stated that the Committee will review proposed NRC staff comments to DOE on this Study Plan when they are available. This briefing was for information only. The Committee requested that it be kept informed of any revisions to this Study Plan.

Dr. Moeller also requested that the Committee be placed on the DOE distribution list for future Study Plans and related correspondence.

5. Waste Confidence Review

The Committee was briefed by members of the NRC Waste Confidence Review Group on the Group's final report and the disposition of the public comments. The ACNW report on the final waste confidence decision review was sent to Chairman Carr on May 1, 1990. (See Item 3)

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

The Committee continued their review of the EPA HLW Standards. The ACNW report on the EPA Standards for disposal of high-level wastes was sent to Chairman Carr on May 1, 1990. (See Item 1)

7. Four Month Program Plan for ACNW

The Committee discussed anticipated ACNW activities during the four-month period of May - August 1990. A report of the activities that the Committee expects to engage in during the next four months was sent to Chairman Carr on May 1, 1990. (See Item 2)

8. ACNW Future Activities

a. Center for Nuclear Waste Regulatory Analyses (CNWRA)

Dr. Hinze recommended that the Committee review the portion of CNWRA resources that is devoted to technical assistance as contrasted to research. Dr. Hinze also recommended that the Committee should be briefed on the recently completed CNWRA reports on the program architecture to review a high-level waste repository.

b. Human Intrusion and Carbon-14 Issues

Dr. Hinze recommended that the Committee have a briefing on the 40 CFR Part 191 approach to human intrusion and concerns with EPA release limits for carbon-14 at the proposed high-level waste repository.

c. Low-Level Radioactive Waste Compacts

Dr. Steindler recommended that the Committee be briefed periodically on the site selection activities of the state compacts.

d. EPRI Study on Probabilistic Risk Assessment for the Proposed Yucca Mountain High-Level Waste Repository

Dr. Hinze recommended that the Committee have EPRI representatives provide a briefing on the status of the EPRI work on the application of PRA to the proposed Yucca Mountain repository after the report on this work is issued. The report is expected to be issued in September and a briefing will be scheduled shortly thereafter.

e. Status of Rulemaking Activities

Dr. Moeller expressed interest in the status of NRC rulemaking activities, such as the rulemaking on the accident dose rate for a high-level waste repository.

f. Discussion of the Use of the Term "representativeness"

Dr. Hinze recommended that the Committee meet with the NRC staff to discuss the use of the term "representativeness" as it pertains to NRC staff's review of DOE's methodology for three-dimensional characterization of the proposed Yucca Mountain repository site.

FUTURE ACTIVITIES

Appendix A summarizes the tentative agenda items that were proposed for future meetings of the Committee. This list includes items proposed by the NRC staff as well as the ACNW members.

APPENDIX A. FUTURE AGENDA

May 24-25, 1990 (Tentative Agenda)

Technical Position on Soil Erosion (Open) - The Committee will review and comment on the final Technical Position on the Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites. The NRC staff expects to complete the development of this Technical Position by the end of May 1990.

Center for Nuclear Waste Regulatory Analyses (Open) - The Committee will be briefed on the systematic regulatory analysis (Program Architecture) for the high-level waste repository.

Licensing Support System (Open) - The Committee will be briefed by the NRC staff on the status of the Licensing Support System in light of DOE schedule changes.

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

June 28-29, 1990 (Tentative Agenda)

Definition of the Term "Representativeness" (Open) - The Committee will be briefed on the definition of "representativeness" as it pertains to NRC staff's review of DOE's methodology for three-dimensional characterization of the proposed Yucca Mountain repository site.

Alternative Exploratory Shaft Facility Construction Techniques (Open) - The Committee will be briefed on alternative exploratory shaft facility construction techniques from both engineering and geoscience perspectives.

Pathfinder Atomic Power Plant Dismantlement (Open) - The Committee will review the NRC staff's Safety Evaluation Report. The final SER is expected to be issued by the end of May 1990. ACNW comments are requested.

Low-Level Waste Research Program Plan Update (Open) - The Committee will be briefed on the draft updated LLW Research Program Plan. A copy of the draft updated plan is to be provided to the Committee in May 1990.

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

BEIR V Report (Open) - The Committee will be briefed by a representative of the National Research Council on the BEIR V Report, "Health Effects of Exposure to Low-Levels of Ionizing Radiation".

Iodine-129 Source Term (Open) - The Committee will be briefed by representatives of EPRI and NUMARC on a methodology for predicting the iodine-129 source term for low-level radioactive waste sites.

NRC Comments on EPA Standards (Open) - The Committee will be briefed by the NRC staff on the comments on proposed EPA standards for the geologic disposal of high-level radioactive waste.

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

Working Group Meeting (Date to be announced)

Migration of Carbon-14 (Open) - The Working Group will be briefed on the potential problems that could arise at a high-level repository as a result of carbon-14 migration. This will include a discussion of concerns with EPA release limits for carbon-14.

Human Intrusion (Open) - The Working Group will be briefed on the 40 CFR Part 191 approach to human intrusion at a high-level waste repository. This will be designed to explore the range of current thinking from various groups in the U.S. and other countries.

July 30-31, 1990 (Tentative Agenda)

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

NRC Research Program (Open) - The Committee will discuss with representatives of NRC's Nuclear Safety Research Review Committee, the NRC research program on the management and disposal of radioactive wastes.

High-Level Waste Research Program Plan Update (Open) - The Committee will be briefed on the draft updated HLW Research Program Plan. A copy of the draft updated plan is scheduled to be provided to the Committee in June 1990.

Trip Report (Open) - Dr. Linda Lehman, Lehman and Associates, will brief the Committee on her recent visits to the Soviet Union to review radioactive waste management activities.

Quality Assessment Activities (Open) - The Committee plans to meet with NRC staff to receive an update on QA activities associated with the HLW repository.

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

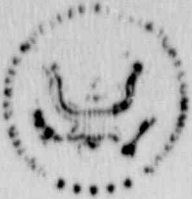
August 29-31, 1990 (Tentative Agenda)

Rulemaking on LLW Shipment Manifest System (Open) - The Committee will review and comment on the proposed rulemaking on the LLW Shipment Manifest System.

Accident Dose Criteria (Open) - The Committee will be briefed by the NRC staff on the status of the proposed rulemaking on postulated accident dose criteria for the HLW repository operations.

EPA Standards (Open) - The Committee will continue discussion on EPA standards for high-level radioactive waste disposal in a geologic repository (per memorandum from F. Galpin, EPA, to D. Moeller, ACNW). Working draft #3 of the standard is scheduled to be issued prior to this meeting.

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



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

Attachment 1

May 1, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: CRITIQUE OF THE ENVIRONMENTAL PROTECTION AGENCY'S
STANDARDS FOR DISPOSAL OF HIGH-LEVEL WASTES

In response to your request during our meeting on February 21, 1990, the Advisory Committee on Nuclear Waste offers the following comments on the problems we see with the EPA standards (Ref. 1) for the disposal of high-level wastes. These comments are an outgrowth of our ongoing review of these standards, including a full-day session on this matter during our 18th meeting, March 22-23, 1990, and additional discussions during our 19th meeting, April 26-27, 1990. Organizations whose representatives took part in the discussions during our 18th meeting included the Environmental Protection Agency, the Nuclear Waste Technical Review Board, the staff of the Board on Radioactive Waste Management of the National Academy of Sciences, the Environmental Evaluation Group of the State of New Mexico, the Advisory Committee on Nuclear Facility Safety of the U.S. Department of Energy, and the General Accounting Office. Members of the NRC staff also attended these meetings.

Key technical problems with the EPA standards include the following:

1. All such standards should be organized in a hierarchical structure with the higher levels expressing the objectives in a qualitative sense and the lower levels stating the objectives quantitatively. Of utmost importance is that the several levels be consistent and that lower levels not be more stringent or conservative than the higher levels, so that they become de facto new standards. This is not the case with the EPA standards.

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2. Although lower level standards can be stated probabilistically, they should be expressed in terms of annual risk limits from a disposal facility in an undisturbed and a disturbed state. The critical population group being considered should be clearly defined. This approach is in accord with recommendations of organizations such as the International Commission on Radiological Protection and the United Kingdom's National Radiological Protection Board.
3. The standards should apply to the disposal facility as a system. Subsystem standards, if expressed, should be given only as guidance, with qualifying statements clearly specifying that they are not to be applied in a regulatory sense.
4. Evaluations of the anticipated performance of the proposed Waste Isolation Pilot Plant indicate that, for the disturbed state, human intrusion is the dominant contributor to risk. Early indications suggested that performance analyses for the proposed Yucca Mountain repository may also show human intrusion to be important. This appears to be a direct result of how the standards for evaluating such intrusions are interpreted, compounded by the overly conservative requirements of the standards. To ameliorate this issue, we suggest that the standards be rewritten to separate the evaluation of anticipated performance into three parts: (a) the undisturbed repository; (b) the disturbed repository, exclusive of human intrusion; and (c) the repository as it might be affected by human intrusion. This would clearly separate out the problem of human intrusion and permit it to be addressed directly. In this regard, we join with the Advisory Committee on Nuclear Facility Safety, U.S. Department of Energy, in recommending that EPA's standards be reworded to permit "considerations such as expectations for future borehole sealing at least as good as the current state-of-the-art." We also believe that more realistic assessments should be made of the potential impacts of human intrusions and that greater credit should be allocated to the ability of future generations to be aware of the presence of a geologic repository through identifying markers and associated records.
5. Experience has shown that probabilistic risk analyses cannot be used reliably to determine the compliance of a single nuclear power plant with a set of standards. A high-level waste repository, which must function for 10,000 years, is still more difficult to assess quantitatively. The EPA standards should clearly specify that risk assessments are but one of several inputs into the evaluation of a given high-level waste repository site and/or facility. Such assessments should not be the only factor in evaluating compliance of such a facility with the EPA standards.

May 1, 1990

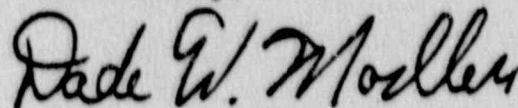
In summary, our key recommendations are:

1. The existing EPA standards need to be revised; now is the time to accomplish this task;
2. The standards should be revised to define what is considered to be an acceptable risk from a high-level waste repository;
3. The standards should specify that a probabilistic approach is acceptable so long as it is but one of several factors to be used in determining the acceptability of a specific site; and
4. The standards should be revised to include separate considerations for evaluating the impacts of human intrusion.

We stand ready to join you and the NRC staff in working with EPA to help develop an acceptable set of standards for a high-level radioactive waste repository. We believe this is the best course of action at the present time. If, however, after a reasonable period of time these efforts do not appear to be accomplishing our mutual goals, we believe other approaches should be considered. One would be for you, as Chairman of the NRC (perhaps joining with the Secretary of DOE) to approach the EPA Administrator with a suggestion that an appropriate organization be selected to review the standards and make recommendations for change. Suggestions for two such organizations are the National Academy of Sciences and the Council on Environmental Quality.

We hope that these comments are helpful. We will be pleased to discuss these matters with you at your convenience.

Sincerely,



Dade W. Moeller
Chairman

References:

1. U.S. Environmental Protection Agency, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes," (40 CFR Part 191), Working Draft 2, dated January 31, 1990

May 1, 1990

2. Letter dated April 17, 1990 from F. L. Galpin, Environmental Protection Agency to Dade W. Moeller
3. Letter dated December 11, 1989 from John F. Ahearne, Advisory Committee on Nuclear Facility Safety, DOE, to James D. Watkins, Secretary of Energy, DOE
4. Sandia National Laboratories, SAND89-2027, "Performance Assessment Methodology Demonstration: Methodology Development for Evaluating Compliance With EPA 40 CFR 191, Subpart B, for the Waste Isolation Pilot Plant," Printed December 1989
5. International Commission on Radiological Protection, ICRP Publication 46, "Radiation Protection Principles for the Disposal of Solid Radioactive Waste," published for the International Commission on Radiological Protection by Pergamon Press, Oxford, England, July 1985
6. National Radiological Protection Board, NRPE-GS 1, "Radiological Protection Objectives for the Disposal of Solid Radioactive Wastes," published in Oxfordshire, England, 1983



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WASHINGTON, D.C. 20555

May 1, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: PROGRAM PLAN FOR THE ADVISORY COMMITTEE ON NUCLEAR WASTE

This is our second response to your memorandum of November 6, 1989, in which you requested that the Advisory Committee on Nuclear Waste (ACNW) provide a program plan at four-month intervals. This plan covers the period May-August 1990. We hope you will find this a convenient source for anticipating our upcoming activities and for providing feedback on issues on which the Commission wishes us to focus our efforts.

In preparing this program plan, we have considered the list of specific technical issues of particular interest to the Commission, the EDO's list of proposed agenda items for the ACRS and the ACNW, the NRC's Five-Year Plan, and items of particular interest and/or concern to the Committee. The priorities proposed are based on information provided by representatives of NMSS, NRR, RES, and the EDO office, as well as our own interpretation of the subject in relation to our activities as a Committee and our input into the regulatory process.

This program plan is based on the current best estimates of work output by the DOE, EPA, NRC staff, and their consultants and contractors, as well as our own estimates of how to deal with these issues effectively. In addition to the full Committee meetings noted, Working Group meetings will be held as necessary to facilitate full Committee review and action. There may be some revisions to this plan associated with the completion of NRC staff, applicant, and/or contractor studies and reviews as well as other schedule problems beyond our control.

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May 1, 1990

Full Committee meeting dates for this period are tentatively scheduled as follows:

20th Meeting	-	May 23-25, 1990
21st Meeting	-	June 28-29, 1990
22nd Meeting	-	July 30-31, 1990
23rd Meeting	-	August 29-31, 1990

The Committee anticipates considering the topics listed below during this four-month period.

May 23-25, 1990

- Review and comment on the NRC staff's draft Technical Position on soil erosion and protection for uranium mill tailings sites. (High priority)
- Briefing by the Center for Nuclear Waste Regulatory Analyses on the Systematic Regulatory Analysis (Program Architecture) for the high-level radioactive waste repository. (Medium priority)
- Briefing on the EPA's low-level radioactive waste standards. (Medium priority)
- Briefing on alternative exploratory shaft facility construction techniques from both engineering and geoscience perspectives. (High priority)
- Invite a representative from the EPA to continue the dialogue on the EPA's high-level radioactive waste standards. (High priority)

June 28-29, 1990

- Discuss the definition of "representativeness" as it pertains to the NRC staff's review of DOE's methodology for three-dimensional characterization of the proposed Yucca Mountain repository site. (High priority)
- Review and comment on the NRC staff's safety evaluation report on the Pathfinder Atomic Power Plant dismantlement plan. (High priority)
- Review and comment on the NRC staff's draft Technical Position on seismic hazards. (High priority)
- Review and comment on NRC's Low-Level Radioactive Waste Research Program Plan. (High priority)

May 1, 1990

- Briefing for information on the status of proactive work in the Division of High-Level Waste Management (technical positions and rules). This will include the impact of changes in the DOE program and schedule on NRC's high-level waste program. (Medium priority)
- Briefing by a representative of the Committee on the Biological Effects of Ionizing Radiations, Board on Radiation Effects Research, Commission on Life Sciences, National Research Council on the BEIR V report, "Health Effects of Exposure to Low Levels of Ionizing Radiation." (Medium priority)
- Briefing by EPRI/NUMARC on a methodology for predicting the iodine-129 source term for low-level radioactive waste sites. (Medium priority)

July 30-31, 1990

- Review and comment on NRC's High-Level Waste Research Program Plan. This may include a briefing by a representative of NRC's Nuclear Safety Research Review Committee on the NRC's radioactive waste research program. (High priority)
- Briefing by Dr. L. Lehman of Lehman & Associates, Inc., on her recent trips to review radioactive waste management activities in the U.S.S.R. (Low priority)
- Briefing on quality assurance activities associated with the high-level radioactive waste repository. (Medium priority)
- Review and comment on the NRC staff's draft Technical Position on stabilization/waste form for low-level radioactive waste. (High priority)
- Briefing on the status of activities associated with the Licensing Support System. (Medium priority)

Unscheduled: (Will be considered as documents and time become available)

- Review and comment on low-level radioactive waste shipment manifest system. (High priority)
- Preparation of a Memorandum of Understanding between the EDO and the ACNW to establish procedures for and describe the roles of the parties in interactions of the ACNW with the NRC staff on topics related to nuclear waste. (High priority)

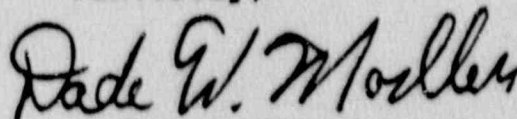
May 1, 1990

- Briefing and/or trip to a proposed low-level radioactive waste disposal site and meeting with appropriate state and/or local officials. (Low priority)
- Briefing on the potential problems that could arise at a high-level radioactive waste repository as a result of migration of carbon-14. This will include a discussion of what fundamental assumptions are made in evaluating the hazard from this radionuclide. (High priority)
- Briefing to explore the subject of human intrusion at a high-level radioactive waste repository. This will be designed to explore the range of current thinking from various groups in the United States and other countries. (High priority)

Plans to review various aspects of on-site dry cask storage activities have been deleted per the April 18, 1990 memorandum from S. Chilk, Secretary, to C. Michelson, ACRS, and D. Moeller, ACNW.

This list represents our best estimate of the topics to be considered through August 1990. If you or your fellow Commissioners have additional items to suggest or proposed changes in priorities, please let us know.

Sincerely,



Dade W. Moeller
Chairman

cc: Commissioner Roberts
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick
Samuel J. Chilk, SECY
James M. Taylor, EDO
Robert M. Bernero, NMSS



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

May 1, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: WASTE CONFIDENCE DECISION REVIEW

During its 19th meeting, April 26-27, 1990, the Advisory Committee on Nuclear Waste met with members of the NRC staff to review the results of the Waste Confidence Review Group's reexamination of the Commission's Waste Confidence Findings.

On the basis of these discussions and our review of the supporting documents we endorse the findings of the Review Group. We also suggest that consideration be given to adding to the statement a brief discussion of the criteria that would be used to prompt a re-evaluation of the current findings sooner than the scheduled ten-year review cycle.

Sincerely,

A handwritten signature in cursive script that reads "Dade W. Moeller".

Dade W. Moeller
Chairman

Reference:

Draft Final Waste Confidence Decision Review and Conforming Amendment to 10 CFR Part 51, With Public Comments, April 12, 1990 (Predecisional)

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