



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

June 13, 1991

MEMORANDUM FOR: James M. Taylor  
Executive Director for Operations

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

SUBJECT: 31ST ACNW MEETING FOLLOW-UP ITEMS

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

Attached is a summary of the "Actions, Agreements, Assignments, and Requests" made at the 31st ACNW meeting, May 22-23, 1991, that deal with requests made of the NRC Staff or that are pertinent to NRC Staff activities.

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. Weber, OCM/KC  
M. V. Federline, OCM/KC  
S. Bilhorn, OCM/KR  
J. Kotra, OCM/JC  
R. R. Boyle, OCM/FR  
W. D. Travers, NRR  
D. M. Crutchfield, NRR

409.55  
R502  
1/1

SUMMARY OF ACTIONS, AGREEMENTS, ASSIGNMENTS, AND REQUESTS  
31ST ACNW MEETING - MAY 22-23, 1991

REPORTS AND MEMORANDA

- Review of Regulatory Guides on Revised 10 CFR Part 20 (Partial Response to Commissioner Rogers, dated May 30, 1991. See Enclosure 1.)
- Alternative Approach to the Probabilistic Section of the Containment Requirements in 40 CFR Part 191 ("The Three-Bucket Approach") (Report to Chairman Carr, dated May 30, 1991. See Enclosure 2.)
- Review of Draft SECY Paper on Dealing with Uncertainties (Memorandum to Mr. Robert Bernero, Director, Office of Nuclear Material Safety and Safeguards, dated May 30, 1991. See Enclosure 3.)

HIGHLIGHTS OF MATTERS CONSIDERED BY THE COMMITTEE

1. Working Draft #3 of the 40 CFR Part 191, High-Level Waste Repository Standards

The Committee was briefed by the U.S. Environmental Protection Agency (EPA) staff on the Working Draft #3 of revised 40 CFR Part 191, High-Level Waste Repository Standards. The Committee agreed to provide a response to the six questions that accompanied Working Draft #3. The Committee will continue its deliberations on this subject during the next meeting.

During the discussion on the additional information on the "three bucket" approach accompanying Working Draft #3, the Committee expressed interest in being briefed by the NRC staff on its basis for establishment of the probability limit for distinguishing between scenarios that are unlikely and scenarios that are very unlikely.

2. Leaching Resistance of Low-Level Waste Form

The Committee briefly discussed its plan of action to prepare a response to a recent Staff Requirements Memorandum (SRM) concerning an ACNW suggestion that Part 61 be revised with regard to leaching resistance of the low-level waste form and groundwater protection requirements. (This topic will be discussed during the June 20, 1991 ACNW meeting.)

3. Uncertainties in Implementing the EPA's HLW Radiation Protection Standards

The Committee completed its deliberations on the NRC staff draft report which describes the NRC staff's plan for dealing with the uncertainties associated with the implementation of the EPA HLW repository standards. A memorandum to Mr. Robert Bernero was approved.

4. Working Group Report on Integration of Geophysics into Site Characterization of a High-Level Waste Repository

Dr. W. J. Hinze, ACNW Working Group Chairman, reported on the importance and advantage of, and potential results from, geophysical testing methods as those methods apply to the identification of potentially adverse conditions at an HLW site.

Dr. Hinze expressed interest in inviting Mr. Max Blanchard, Yucca Mountain Project Office (YMPO), to brief the Committee on the YMPO data system.

5. Memorandum from Commissioner Rogers

The Committee discussed a memorandum from Commissioner Rogers, dated April 29, 1991, regarding three questions to be answered by the Committee. The Committee agreed to establish a Working Group to address the first two questions, which inquire whether the NRC staff has developed a suitable performance assessment program and whether there is adequate equipment, expertise and training available to the NRC staff for HLW and LLW computer modeling. Dr. P. W. Pomeroy will be the Chairman of this Working Group. The Working Group is tentatively scheduled to meet on September 11-13, 1991.

The Committee prepared a memorandum to Commissioner Rogers in response to his question on the basis/criteria for apportionment of the responsibilities between the ACRS and ACNW for review of the regulatory guides being developed in support of the revised 10 CFR Part 20.

In view of the estimated time required to prepare an adequate response, the Committee agreed to request that the SECY deadline for response to Commissioner Rogers' other two questions be moved from May 30, 1991, to October 1991.

6. Meeting With Dr. Frank Congel, NRR

Dr. Moeller reported on his meeting with Dr. Frank Congel to discuss airborne releases from nuclear power plants. Mr. Congel agreed to submit an informal report to the Committee on the matters discussed.

7. ACNW Future Activities

- The Committee selected the following tentative dates for future Working Group meetings:

<u>Topic</u>	<u>Dates</u>	<u>Chairman</u>
10 CFR 20 Regulatory Guides Computer Modeling/ Performance Assessment	8/20-22/91	D. Moeller
Quaternary Dating	9/11-13/91	P. Pomeroy
Residual Contamination	10/22/91	W. Hinze
Long-Term Climatology	10/25/91	M. Steindler
Post-Closure Monitoring	11/19/91	W. Hinze
Human Intrusion/Natural Resources	11/22/91	D. Moeller
	12/17/91	W. Hinze

- The Committee agreed that there is no longer a need to have a Working Group on an alternative probabilistic format for the containment requirements in EPA's high-level waste standards.

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

APPENDIX A. FUTURE AGENDA

32nd ACNW Committee Meeting June 20, 1991 (Tentative Agenda)

Leaching Resistance of Low-Level 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.

Trip Reports - Dr. Pomeroy will report on his recent visit to the West Valley Demonstration Project, New York. Dr. Hinze will report on the American Geophysical Union Meeting, held in Baltimore, Md.

Joint Working Group Report - The Committee will hear a report on a joint meeting of the Working Group on Expert Judgment and the Working Group on Human Intrusion, held on June 18-19, 1991.

Working Draft #3 of the 40 CFR Part 191, High-Level Waste Repository Standards - The Committee will continue its discussion of a response to the six questions accompanying the EPA working draft #3 of the HLW Repository Standards.

Working Group Meetings

Joint Meeting of Working Group on Expert Judgment and the Working Group on Human Intrusion in the Performance Assessment for Nuclear Waste Disposal, June 18 and 19, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Gnugnoli) 8:30 a.m., Room P-110 - The Working Group will continue the examination of methods for eliciting expert judgment. The scheduled discussions are focused on the actual mechanics of elicitation. This includes questions on how the experts will be selected and identified as well as how the selected experts are trained and how their opinions are aggregated. Human intrusion will be used to relate the elicitation process to a real and useful application. Participants will include normative experts (i.e. those that establish the procedures for the use of expert judgment), as well as NRC and DOE staff and consultants involved with Yucca Mountain and WIPP.

Regulatory Guides for Implementing Revisions to 10 CFR Part 20, August 20-22, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Gnugnoli) - The Working Group will review, discuss and make recommendations on seven regulatory guides:

- Interpretation of Bioassay Measurements

- Instruction on Health Risks from Occupational Radiation Exposure
- Instructions to Pregnant Women
- Criteria and Procedures for Summation of Internal and External Occupational Doses
- Dose to Embryo/Fetus
- Assessing External Radiation Doses from Airborne Radioactive Materials
- Air Sampling

The following two draft regulatory guides will also be considered:

- Preparation of Applications for Use of Sealed Sources and Devices for Performing Industrial Radiography
- Preparation of Applications for Medical Uses

NRC Staff Computer Modeling and Performance Assessment Capabilities in HLW and LLW, September 11-13, 1991, 7920 Norfolk Avenue, Bethesda, Md, (Gnugnoli) - The Working Group will review, discuss and make recommendations regarding the NRC staff capabilities to make independent evaluations of licensee proposals with respect to the performance of low-level and high-level radioactive disposal facilities. Emphasis will be placed on computational capabilities involving computer modeling, documentation, verification and validation.

Geologic Dating October 22, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Abrams) - 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 October 25, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Gnugnoli) - The Working Group will review, discuss and make recommendations regarding the soil clean-up criteria and clean-up levels for unrestricted use at contaminated sites that are or have been under AEC or NRC license.

Long-Term Climate Change November 19, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Abrams) - The Working Group will review and discuss potential long-term climate changes and their impact on performance assessments and ultimately on the suitability of the site for the proposed HLW repository.

Post-closure Monitoring November 22, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Larson) - The Working Group will discuss post-closure monitoring of an HLW repository and other related issues. The ACNW staff will invite representatives from EPA, DOE and NRC to brief the Committee on various aspects associated with post-closure monitoring.

31st ACNW Meeting  
May 22-23, 1991

6

Human Intrusion December 17, 1991, 7920 Norfolk Avenue, Bethesda, MD, (Abrams) - The Working Group will discuss methodologies for the assessment of the potential for natural resources at the proposed HLW disposal site.



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

May 30, 1991

The Honorable Kenneth C. Rogers  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555

Dear Commissioner Rogers:

**SUBJECT: REVIEW OF REGULATORY GUIDES ON REVISED 10 CFR PART 20**

In response to the last question of your memorandum of April 29, 1991, we are pleased to provide the following information concerning the regulatory guides that are being developed in support of revised 10 CFR Part 20.

The plan for reviewing these guides was based on discussions between James Carroll, then Chairman of the cognizant Advisory Committee on Reactor Safeguards (ACRS) subcommittee and Dade Moeller, Chairman of the Advisory Committee on Nuclear Waste (ACNW) with input from Raymond Fraley, Executive Director, ACRS/ACNW. J. Ernest Wilkins, Jr. (ACRS) has subsequently been assigned as the Chairman of this subcommittee and has no objection to this plan of action.

Because of their significance and direct applicability to nuclear power plants, Mr. Carroll noted the ACRS intent to review four of the proposed guides. These are

1. Radiation Protection Programs for Nuclear Power Plants
2. Control of Access to High and Very High Radiation Areas in Nuclear Power Plants
3. Instructions for Recording and Reporting Occupational Radiation Exposure Data
4. Planned Special Exposures

The ACNW assumed lead responsibility for the remaining regulatory guides. A review of their titles, however, indicates that only seven relate to the control of or impact from radionuclides that might be released as a result of waste management activities or to the assessment of their associated risks. These guides, which the ACNW plans to review, are

1. Interpretation of Bioassay Measurements
2. Criteria and Procedures for Summation of Internal and External Occupational Exposures
3. Air Sampling

~~410614-0081~~ Jpp duje



May 30, 1991

4. Assessing External Radiation Doses from Airborne Radioactive Materials
5. Instructions on Health Risks from Occupational Radiation Exposures (Regulatory Guide 8.29)
6. Dose to Embryo/Fetus
7. Instructions to Pregnant Women (Regulatory Guide 8.13)

The regulatory guides that remain are

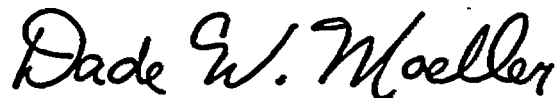
8. Preparation of Applications for Use of Sealed Sources and Devices for Performing Industrial Radiography (Appendix to Regulatory Guide 10.6)
9. Preparation of Applications for Medical Uses (Appendix to Regulatory Guide 10.8)

The ACNW plans to give these last two guides a preliminary review in order to determine if a more detailed review appears warranted.

It should be noted that both the ACRS and the ACNW will keep the other Committee informed regarding each other's activities with respect to these guides so that areas of mutual interest/concern can be coordinated, consistent with Chairman Carr's memorandum of November 6, 1989.

We trust this responds to the last question in your memorandum. Although we believe your first two questions address issues of far higher priority, we nonetheless have made plans to assist in reviewing these regulatory guides in accordance with our interpretation of SECY-91-023 (Development of Regulatory Guides for 10 CFR Part 29) and the priorities established for conduct of ACNW activities. Should you have questions concerning this response, or believe that we should handle these reviews in a different manner, we would welcome your comments.

Sincerely,



Dade W. Moeller  
Chairman



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

May 30, 1991

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

Dear Chairman Carr:

**SUBJECT: ALTERNATIVE APPROACH TO THE PROBABILISTIC SECTION OF THE CONTAINMENT REQUIREMENTS IN 40 CFR PART 191 ("THE THREE-BUCKET APPROACH")**

With the issuance of Working Draft 3 of 40 CFR Part 191, the proposed revised standards for the management and disposal of high-level radioactive wastes, the U.S. Environmental Protection Agency (EPA) has requested comments on the proposed "three-bucket approach" for classifying events that may affect repository performance. The Committee discussed this matter with the NRC staff during our 30th meeting, April 23-24, 1991, and with the EPA staff during our 31st meeting, May 22-23, 1991. On the basis of these discussions, we offer the following comments.

In general, we endorse the three-fold classification system outlined in the enclosure, and we believe it will be helpful in addressing the problems of assessing inadvertent human intrusion. We also endorse the deterministic treatment of scenarios that are assigned to "bucket number two."

We accept the fact that the presence of natural resources represents a potentially adverse condition [10 CFR 60.122(c)]. If there are potential resources present at a site in large enough amounts to create a high probability for human intrusion, the site should be rejected. We expect that no scenario involving inadvertent human intrusion will be assigned to "bucket number one."

As part of our continuing study of the "three-bucket approach," we are evaluating the bounding probability limit for distinguishing between scenarios that are unlikely ("bucket number two") and very unlikely ("bucket number three").

~~91-061-00073~~

The Honorable Kenneth M. Carr 2

May 30, 1991

We hope these comments will be helpful.

Sincerely,

*Dade W. Moeller*

Dade W. Moeller  
Chairman

**Reference:**

EPA, 40 CFR 191 - Draft Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes, dated April 26, 1991, with attachments.

**Enclosure:**

Viewgraph from presentation by EPA representatives to the Advisory Committee on Nuclear Waste, May 22, 1991

# Three-Bucket Proposal

## Distributed Separately for Comment

---

### 1985 Standards

Quantitative, probabilistic performance assessment for scenarios down to 1/1,000

### Suggested Wording

*Bucket One:*

Scenarios  $>1/10$ : quantitative probabilistic performance assessment

*Bucket Two:*

Scenarios  $<1/10$  but  $>1/10,000$ : individual scenario, deterministic analysis, comparison to 10X the release limits

*Bucket Three:*

Scenarios  $<1/10,000$ : analysis not required

ENCLOSURE



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

May 30, 1991

Mr. Robert M. Bernero, Director  
 Office of Nuclear Material  
 Safety and Safeguards  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555

Dear Mr. Bernero:

**SUBJECT: REVIEW OF DRAFT SECY PAPER ON DEALING WITH UNCERTAINTIES**

The Advisory Committee on Nuclear Waste has reviewed a copy of the draft SECY paper, "Staff's Approach for Dealing with Uncertainties in Implementing the EPA High-Level Waste Standards." As you know, the NRC staff is writing this paper in response to a request from the Commission for an explanation of the management of uncertainties during the process of evaluating compliance of a proposed repository with the probabilistic standards of the U.S. Environmental Protection Agency (EPA). During our 30th meeting, we had extensive discussions on this topic with members of your staff. The transcript of our April 24, 1991 meeting contains details of our comments and concerns.

The draft SECY paper and its accompanying document provide a broad view of the uncertainties that will need to be addressed during site characterization and the subsequent licensing process. Although the draft SECY paper includes discussion of methods to reduce uncertainties, we believe the staff has insufficiently clarified its role in the management of uncertainties that will remain after a license application is submitted. The draft SECY paper is also substantially silent on (1) the general program plan envisioned by the NRC staff for managing uncertainties, (2) the way in which rulemaking and similar protocols will be used to manage uncertainties that are likely to become important at the time of license hearings, and (3) the distinction between the role of the NRC and that of the U.S. Department of Energy in reducing and managing technical uncertainties. At the same time, the draft SECY paper includes extensive coverage of topics that could be interpreted as not being pertinent to the questions that need to be addressed. One example is the discussion of the benefits to be derived from the existing version of the EPA Standards. The discussion of collective versus individual dose limits should also be removed from the SECY paper.

Although the draft paper is partially responsive to the request of the Commission for a discussion of the management of uncertainties, there is a need to develop a program plan that (1) establishes guidelines for developing responses to a broad range of uncertainty

*9/10/91 PPH/LLA*

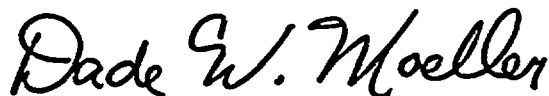
May 30, 1991

issues; (2) describes the bases for actions by the staff, for example, the method of balancing reliability and risk; and (3) serves as a guide to the preparation of additional reports that systematically explore the application of the overall plan to various parts of the licensing process, such as the approach to reconciling expert judgments that conflict. Such a plan would provide assurance of long-term regulatory consistency and completeness; in essence, it would serve as a "road map." The existing draft paper and our discussions with the NRC staff can readily serve as a beginning for the preparation of a program plan.

We believe that the staff is approaching the difficult and complex topic of uncertainty issues with growing insight. Although the present draft SECY paper represents an improvement over the earlier version, it demonstrates the need to organize the variety of issues to be addressed so that uncertainties are minimized and managed satisfactorily, leading to the formulation of defensible policies. Some parts of the draft paper, particularly portions of section 2 and much of section 3, could, after revision, be issued as a partial response to the Commission's request.

We look forward to working with the staff on these matters and to reviewing additional documents on this important topic as they are developed. We would be pleased to meet with you to elaborate on our comments and suggestions.

Sincerely,



Dade W. Moeller  
Chairman

Reference:

Draft SECY Paper, "Staff's Approach for Dealing with Uncertainties in Implementing the EPA High-Level Waste Standards," undated, received April 26, 1991.