

June 27, 2002

The Honorable Richard A. Meserve  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: FY 2002 AND FY 2003 ACTION PLAN FOR THE ADVISORY COMMITTEE ON  
NUCLEAR WASTE

Dear Chairman Meserve:

The Advisory Committee on Nuclear Waste (ACNW) has updated and finalized its Action Plan (Plan) to reflect new and continuing priorities for FY 2002 and 2003. The Committee will continue to update the Plan on an annual basis. The Plan identifies our mission, vision, desired outcomes, commitments, goals, objectives, and priority topics. The Plan supports the U. S. Nuclear Regulatory Commission's (NRC's) Strategic Plan for FY 2002–FY 2005 (NUREG-1614, Vol. 2). The Plan is also consistent with the ACNW's charter and will form the basis of the next updated ACNW operating plan.

A primary purpose of the Plan is to guide the Committee in carrying out its mission. In addition to the priority topics identified in the Plan, the ACNW identifies operational process improvements that it will implement this year to improve its efficiency and effectiveness. The ACNW will track progress and outcomes of these process improvements in a separate, internal planning document.

The Committee has identified four first-tier priority topics and four second-tier priority topics for FY 2002 and FY 2003:

First-Tier Topics:

1. Resolution of Key Technical Issues
2. Risk-Informing the High-Level Waste Licensing Process
3. Transportation of Radioactive Waste
4. Decommissioning Options

Second-Tier Topics:

1. Performance Confirmation and Long-Term Monitoring for Yucca Mountain
2. Waste-Related Research
3. Proposed Private Fuel Storage Facility
4. Low-Level Radioactive Waste

The Committee plans to address its first-tier priority topics over the next few years, and the second-tier priority topics if time and resources permit, unless otherwise directed by the Commission. New topics for this year include first-tier topics 1 and 2, and second-tier topic 1. Other changes in this year's Plan include shifting the transportation of radioactive waste topic from the second tier to the first tier due to increasing stakeholder interest. Many of the issues identified for review under last year's topics are still identified as issues for review under this year's new topics; the Committee has simply changed the degree of emphasis it will place on these issues.

In addition to reviewing issues identified under these eight priority topics, the ACNW will continue to participate in activities of the Joint ACNW and Advisory Committee on Reactor Safeguards Subcommittee. These priority topics are described in more detail in the enclosed Plan.

Sincerely,

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George M. Hornberger  
Chairman

Attachment:  
FY 2002 and FY 2003 Action Plan for ACNW

## **FY 2002 AND FY 2003 ACTION PLAN ADVISORY COMMITTEE ON NUCLEAR WASTE**

### **PURPOSE OF PLAN**

This Action Plan (Plan) provides strategic direction and guidance for fiscal years 2002 and 2003 to the Advisory Committee on Nuclear Waste (ACNW) for addressing the issues that are most important to the U.S. Nuclear Regulatory Commission (NRC) in carrying out its mission to protect public health and safety, promote the common defense and security, and protect the environment. The Plan defines the ACNW's mission, vision, desired outcomes, commitments, goals, objectives, and priority topics and issues selected for review. For each goal, the Plan indicates the relationship between the goal and the strategic arenas and management strategies in the NRC's FY 2000–FY 2005 Strategic Plan (NUREG 1614, Vol. 2).

This Plan also provides the Commission, NRC staff, and other ACNW stakeholders with information about the priority topics on which the ACNW plans to focus its reviews. The Committee selected the first- and second-tier priority topics in a top-down manner, designed to support our mission, vision, goals, and objectives. The priority topics consist of self-initiated topics and topics requested by the Commission, as well as topics requested by the NRC staff and other stakeholders.

### **SCOPE OF ACNW ACTIVITIES**

The Committee reports to and advises the Commission on technical matters related to nuclear materials and waste management. The bases of ACNW reviews include Title 10, Parts 20, 40, 50, 60, 61, 63, 70, 71, and 72 of the *Code of Federal Regulations* (CFR), as well as other applicable regulations and legislative mandates. The ACNW will undertake studies and activities related to the transportation, storage, and disposal of high-level and low-level radioactive waste (HLW and LLW, respectively), including the interim storage of spent nuclear fuel; materials safety; decommissioning; application of risk-informed and performance-based (RIPB) regulations; and evaluation of licensing documents, rules, regulatory guidance, and other issues, as requested by the Commission. The Committee will interact with representatives of the public; the NRC; the Advisory Committee on Reactor Safeguards (ACRS); other Federal agencies; State and local agencies; Indian Nations; and private, international, and other affected organizations, as appropriate, to fulfill its responsibilities.

### **RISK-INFORMED, PERFORMANCE-BASED APPROACH**

The Committee believes that it best serves the Commission by taking an RIPB approach to its activities. The Committee will accomplish this goal, in part, by supporting the Commission in applying the principles in the NRC's probabilistic risk assessment (PRA) policy statement, dated August 10, 1995 (60 FRN 42622), to waste and materials regulations. For example, in its reviews, the ACNW will encourage use of PRA principles and associated analyses (sensitivity studies, uncertainty analyses, and importance measures) to reduce unnecessary conservatism associated with the NRC's regulatory framework. The ACNW will also encourage realism, transparency, and consistency in risk and performance assessments, including the identification of uncertainty in these assessments.

In addition to supporting the PRA policy statement, the Committee will encourage implementation of a flexible, overall RIPB regulatory framework for the NRC's materials and

waste-related regulations. An RIPB approach should reduce rigid interpretation and prescriptive approaches in the application of regulations. An RIPB framework should facilitate the use of more defensible and transparent regulation and will improve confidence in regulatory decisions. In this way, the NRC can develop more efficient regulations that have an obvious link to safety and encourage a more effective allocation of NRC and licensee resources.

## **ACNW MISSION**

The ACNW's mission is to provide the Commission with independent and timely technical advice on nuclear materials and waste management issues to support the NRC in conducting an efficient and effective regulatory program that enables the Nation to use nuclear materials in a safe manner for civilian purposes.

## **ACNW VISION, DESIRED OUTCOMES, AND COMMITMENTS**

The Committee has identified a vision statement and desired outcomes to guide the Committee's implementation of its mission, and commitments that will guide the Committee toward these outcomes.

### Vision

The ACNW's advice and recommended solutions are forward-looking, are based upon best available science and technology, can be implemented, and reflect the need to balance risk, benefit, and cost to society to enable the safe use of nuclear materials.

### Desired Outcomes

1. ACNW advice reflects the need for safety and the need to balance risk, cost, and benefit in all of the NRC's decisions.
2. ACNW advice is clear, concise, and easily understood.
3. ACNW provides an effective forum for the public to participate in the regulatory process, increases public confidence in the regulatory process, and ensures that communication paths with the public remain open and effective.
4. ACNW advice is provided in ample time for consideration by the Commission in making regulatory decisions.
5. ACNW advice reflects sound technical judgment and influences the NRC's regulations and guidance.
6. ACNW advice alerts the Commission to emerging and potentially challenging issues.
7. ACNW advice reflects consideration and awareness of relevant waste and materials issues that cut across other Federal agencies, institutions, and industry.

8. ACNW advice is valued by the Commission, the NRC staff, the public, and other stakeholders.

### Commitments

To achieve its desired outcomes, goals, and objectives, the Committee makes the following commitments:

1. Make safety its highest priority.
2. Be responsive to the Commission's needs and requests.
3. Maintain technical excellence, independence, and credibility.
4. Adopt the NRC's plain language initiative.
5. Regard the public as its ultimate stakeholder and seek better ways to obtain meaningful public involvement.
6. Implement a risk-informed philosophy by asking: What is the risk? What are the important contributors to risk? What are the uncertainties associated with the risk?
7. Strive to examine issues and offer advice while regulatory solutions are still being formulated.
8. Foster an atmosphere of mutual problem solving with the NRC staff.
9. Remain flexible, anticipate change, and evaluate options and contingencies.
10. Keep informed of external trends and events that may adversely impact the NRC.
11. Keep abreast of international trends and developments that could affect the NRC's regulatory practices or approaches and apply the experience when practicable.
12. Identify relevant waste and materials issues that cut across the NRC and other Federal agencies, institutions, and industry.
13. Abide by the Committee's Action Plan to foster the efficiency and effectiveness of Committee activities and products.

### **GOALS AND OBJECTIVES**

The ACNW has developed general goals and objectives consistent with its mission and vision. The following five goals provide strategic direction for the ACNW over the next 2 years and support selected goals and strategic arenas identified in the NRC's Strategic Plan. Each goal is followed by objectives to help the Committee better select and focus its priority issues.

**Goal 1: Assist the NRC in positioning itself to respond to external change in its regulation of the management of nuclear waste and materials.** [This goal supports the NRC's Nuclear Waste Safety and Nuclear Materials Safety strategic arenas and NRC's strategic goal and primary performance goal to maintain safety, protect the environment, and ensure the common defense and security.]

*Objective 1: Advise the Commission in a timely fashion on technical developments that may require changes in the NRC's regulations, policies, and practices.*

*Objective 2: Inform the Commission of issues that the NRC needs to address and recommend solutions.*

**Goal 2: Support the NRC in employing the best science in resolving key safety issues.** [This goal supports the NRC's Nuclear Waste Safety and Nuclear Materials Safety strategic arenas and the specific performance goal to make NRC activities and decisions more effective, efficient, and realistic.]

*Objective 1: Keep informed of methods and technologies being developed and used worldwide that are applicable for assessing and managing risks associated with the cleanup, disposal, and storage of nuclear waste.*

*Objective 2: Advise the Commission on enhancements to the NRC staff's technical capabilities that are needed to address current and expected Commission needs.*

*Objective 3: Advise the Commission and the NRC staff on ways to use risk-informed and performance-based approaches to develop efficient and effective regulations and regulatory framework.*

**Goal 3: Advise the NRC on how to increase its reliance on risk as a basis for decisionmaking, including methods that (1) implement a risk-informed approach, (2) quantify and reveal uncertainties, and (3) are consistent across programs.** [This goal supports the NRC's nuclear waste safety and nuclear materials safety strategic arenas and the specific performance goal to reduce unnecessary regulatory burden on stakeholders.]

*Objective 1: Encourage the NRC staff in seeking and proposing approaches to gain a better understanding of the inherent risks of activities within its regulatory responsibilities, as well as the relationship between regulations, cost, and safety.*

*Objective 2: Propose approaches that provide a better understanding of the inherent risks associated with nuclear power and the relationship between safety, regulations, and cost, and advise the Commission on the proposals.*

*Objective 3: Provide technically sound and realistic approaches for resolving new and emerging issues, and identify ways to utilize risk-informed and performance-based approaches related to the safe use of nuclear materials for civilian purposes.*

**Goal 4: Support the NRC in improving public involvement and understanding in its waste and materials programs and in gaining increased public confidence and respect.** [This goal supports the NRC's nuclear waste safety and nuclear materials safety strategic arenas and the specific performance goal to increase public confidence.]

*Objective 1: Provide opportunities through the Federal Advisory Committee Act process for more meaningful public involvement in the regulatory process.*

*Objective 2: Recommend ways for the NRC to achieve more meaningful public involvement in the regulatory process, taking into consideration lessons learned from international experience.*

*Objective 3: Assist the NRC in making the agency's decisionmaking process more transparent and ensuring that agency documentation is readily understandable and addresses the relevant issues.*

**Goal 5: Support the effectiveness and efficiency of NRC operations.** [This goal supports the NRC's Corporate Management Strategies to employ innovative and sound business practices.]

*Objective 1: Select and evaluate feedback from stakeholders on ACNW operations.*

*Objective 2: Evaluate and modify existing ACNW operational procedures as appropriate, to accomplish "more with less."*

## **PRIORITY TOPICS AND PROCESS IMPROVEMENTS**

In support of its first four goals, the ACNW has identified its highest priority topics through FY 2003, and other important topics that it plans to address as time and resources permit. The highest priority topics are identified as first-tier priorities, while other important topics are identified as second-tier priorities. The Committee plans to place most of its emphasis on reviewing issues under the first-tier topics, unless otherwise directed by the Commission. The ACNW will address to a lesser extent or stay informed of issues under the second-tier topics, but is not likely to carry out a concentrated effort on any of these issues. The Committee has taken care to ensure that each priority topic supports one or more of the ACNW's goals.

The Committee has also defined the criteria it uses to select its priority topics. In support of its fifth goal, "support the effectiveness and efficiency of NRC operations," the ACNW has identified the improvements in operational processes it will carry out this year and next. The Committee will track its progress toward these process improvements in a separate, internal planning document, and will periodically evaluate their impact.

For each priority issue addressed, the Committee plans to prepare a task action plan that will identify the nature and scope of the issue and a strategy for addressing it. These task action plans will include a schedule, purpose, scope, planned products, and performance measures to evaluate the Committee's effectiveness.

Identified below are the criteria for selecting priority topics, followed by a brief background discussion of the selected topics.

### Criteria for Selecting Priority Topics

The Committee uses the following criteria to select priority topics:

- the likelihood that a topic, if not properly addressed, will result in significant adverse impact on the environment, significant risk to the health and safety of the public, or unnecessary economic costs
- topics for which the Commission or the Executive Director for Operations requests ACNW review
- topics for which the ACNW can provide a unique input that will add significant value to the resolution of the issue
- the relevance of the topic in the NRC's near-term regulatory agenda and the need for timely ACNW review
- the level of interest shown by NRC's external stakeholders in a topic and the degree to which ACNW engagement of the topic will have a positive impact on stakeholder confidence

### Background Information on Priority Topics

On February 15, 2002, President Bush submitted a recommendation to Congress that Yucca Mountain, Nevada, be developed as the Nation's first geologic repository for the disposal of spent nuclear fuel and other HLW. On April 8, 2002, the Governor of Nevada filed a notice of disapproval of the proposed Yucca Mountain project. The decision now rests with the Congress. If the Congress passes a joint resolution that allows work on the proposed Yucca Mountain repository to continue, the U.S. Department of Energy (DOE) will submit a license application to the NRC for construction of the repository. Any potential DOE license application for construction at Yucca Mountain would be reviewed in accordance with the NRC's risk-informed, site-specific regulations for HLW disposal in 10 CFR Part 63.

The NRC has conducted extensive prelicensing interactions with DOE concerning the proposed Yucca Mountain HLW repository. As part of these prelicensing activities, the NRC engaged the DOE in a pre-licensing issue resolution process, identifying key technical issues (KTIs) and sub-issues. By the end of 2001, the NRC and DOE reached a closed-pending status on all KTI sub issues, pending receipt and acceptance of information to be provided by DOE on some 293 agreements. Current DOE planning assumptions suggest a potential DOE license application sometime in 2004. Throughout 2002 to 2004, the NRC will continue to collect and evaluate information provided by DOE and hold technical exchange meetings to close, at the staff level, KTI subissues prior to licensing. Plans for performance confirmation testing and long-term monitoring will become increasingly more important as the program moves toward licensing. Some KTIs may remain open or closed-pending even into the performance confirmation period pending completion of long-term tests and analyses.



Transportation of spent nuclear fuel continues to gain increased national attention as the President's recent site recommendation to the Congress brought Yucca Mountain more into the public eye. A public discussion of the risks associated with the transportation of HLW and the roles and responsibilities of the various involved entities is needed to improve stakeholders' understanding of and confidence in this activity. Transportation of spent nuclear fuel is also one of the public concerns related to independent spent fuel storage. NRC adjudicatory hearings are currently in progress concerning an application from Private Fuel Storage to operate an independent spent fuel storage installation on the reservation of the Skull Valley Band of Goshute Indians in Utah.

Safe and efficient decommissioning of nuclear reactors and nuclear materials facilities continues to be a critical function of the NRC's mission, and a concern to the public, industry, and other stakeholders. Complex technical and policy issues remain unresolved. Such issues include those associated with the release of property under restricted conditions, such as, long-term institutional controls, the proposed rulemaking on entombment options for nuclear power reactors, control of the release of solid materials, and orphan and sealed sources. Because decommissioning waste must be disposed of in LLW disposal facilities, the failure of the Low-Level Waste Policy and Amendments Act of 1985 to bring about new LLW disposal facilities is also a concern. In addition to the absence of new disposal sites, the availability of existing LLW sites may become limited in the near future.

### First-Tier Priority Topics

#### Resolution of Key Technical Issues

The ACNW has closely tracked the NRC's key technical issue resolution process since its inception. In 2001, the ACNW conducted a vertical slice review of several KTIs and subissues to evaluate the NRC's issue resolution process and sufficiency review. The ACNW's emphasis was on evaluating whether the issue resolution process was risk-informed, including whether the NRC staff was developing and using risk insights to inform its precicensing agreements with DOE. As part of its continued evaluation of the issue resolution process, the ACNW may extend its vertical slice review concept to examine selected KTI sub-issues, such as modeling of igneous activity, and corrosion of waste packages, and continue to examine development and use of risk insights. In addition, the ACNW plans to closely follow the progress of the NRC's 293 issue resolution agreements, and review and comment on the draft Integrated Issue Resolution Status Report (IRSR), when it is made publicly available.

#### Risk-Informing the HLW Licensing Process

10 CFR Part 63 reflects the NRC's effort to implement an RIPB regulatory framework that relies primarily on the use of iterative performance assessment techniques to simulate the future behavior of the engineered and natural components of a geologic repository at Yucca Mountain. Over the next several years, the ACNW will review and comment on the Yucca Mountain Review Plan (YMRP), which would be used to review any potential DOE license application. In particular, the Committee will emphasize how the NRC staff uses risk insights from sensitivity analyses and other performance assessment investigations to resolve technical issues for improving the risk-informed focus of the YMRP. In followup to its vertical slice review of DOE's total system performance assessment-site recommendation (TSPA-SR), the Committee also plans to continue evaluating the DOE's TSPAs and supporting documents. The Committee

also plans to continue tracking progress in the NRC's performance assessment capability, including evaluating developments in the TPA 4.0 computer code. In FY 2003, the ACNW plans to hold a working group meeting to evaluate differences between DOE and NRC performance assessment assumptions and results, including the extent to which the respective performance assessment activities have been subject to independent scientific validation.

#### Transportation of Radioactive Waste

The Committee plans to convene a working group meeting on transportation to examine past and ongoing risk studies on transportation safety. Participants may include members from the NRC staff project office and representatives from the Department of Transportation, from DOE national laboratories involved in testing spent fuel transportation systems, international organizations, State and local governments, and the public. In addition to the working group meeting, the Committee will continue to follow developments in the staff's waste package performance study, and possibly review transportation risk as documented in the final Yucca Mountain Environmental Impact Statement.

#### Decommissioning Options

Decommissioning will continue to be a first-tier priority topic for the Committee. This year, the Committee plans to evaluate developments in controlling the release of solid materials, including reviewing the report by the National Research Council entitled, "The Disposition Dilemma: Controlling the Release of Solid Materials from the NRC-Licensed Facilities," dated March 21, 2002. The Committee also plans to explore developments in alternatives to restricted release criteria and use of institutional controls. The ACNW will continue to follow the development of decommissioning guidance, including the use of RIPB in decommissioning applications. Other issues may include the disposal of greater-than-class C wastes, including orphan and sealed sources; the decommissioning of the West Valley, New York Demonstration Project; and the application of the License Termination Plan to a complex site.

#### Second-Tier Priority Topics

##### Performance Confirmation and Long-Term Monitoring for Yucca Mountain

The ACNW plans to review the staff's plan to evaluate DOE's proposed performance confirmation program for Yucca Mountain. The Committee expects to review tests, experiments, and analyses proposed in DOE's performance confirmation program, or those suggested by the NRC. The Committee may also evaluate long-term, post-closure monitoring for Yucca Mountain as well as the techniques for testing and monitoring that could be useful for other prospective waste sites. The Committee may move this second-tier priority topic to the first tier next year, and plans to hold a working group meeting in 2003.

## Waste-Related Research

The ACNW will continue to report once a year to the Commission on NRC's waste-related research and technical assistance programs. Specifically, the Committee will continue to examine the research performed by the NRC's Office of Nuclear Regulatory Research that is associated with nuclear waste safety and the technical assistance work performed by the Center for Nuclear Waste Regulatory Analyses. The ACNW will continue to monitor the integration of research and technical assistance programs. The Committee may consider elements of an appropriate anticipatory research program, and lessons-learned from past anticipatory research that can be applied to planning future research programs.

## Proposed Private Fuel Storage Facility

In June 1997, Private Fuel Storage submitted a license application (LA) to the NRC to operate an away-from-reactor independent spent fuel storage installation on the reservation of the Skull Valley Band of Goshute Indians in Utah. After reviewing the LA, the NRC staff issued its safety evaluation report in September 2000. Adjudicatory hearings are currently in progress. The ACNW will continue to stay informed of the technical issues associated with this facility and its proposed operation and will provide such reviews as appropriate.

## Low-Level Waste (LLW)

The ACNW will keep informed of any new developments related to issues under this topic. Possible issues of interest include growing concern over possible decreasing LLW disposal capacity, assured isolation, management of mixed-waste (waste with a hazardous and radioactive component), and possibly management of LLW or intermediate-level waste in other countries.

## **JOINT ACRS/ACNW SUBCOMMITTEE ACTIVITIES**

The Commission authorized the establishment of the joint subcommittee in response to a request for ACRS/ACNW assistance on activities associated with risk-informing regulations developed by the NRC's Office of Nuclear Materials Safety and Safeguards (NMSS). The scope of the joint subcommittee's work now includes some activities that are within the purview of both Committees, so as to provide effective and efficient reviews utilizing the expertise of both committees. The joint subcommittee plans to continue its review of risk-informing NMSS activities, proposed PRA for spent fuel dry cask storage, proposed safety goals for NMSS activities, decommissioning issues that overlap both ACNW and ACRS assignments, and other technical issues that would benefit from a review by the joint subcommittee. One such activity is the review of the Integrated Safety Assessment (ISA) for the Mixed Oxide (MOX) Fuel Fabrication Facility.

## **MEASURES OF SUCCESS**

The Committee will assess the extent to which the goals and objectives in this Plan have been met and report the results in the annual ACNW operating plan. The Committee has established performance metrics to measure its overall effectiveness. The performance metrics include the ACNW's effectiveness, efficiency, quality, timeliness, and success in contributing to the RIPB

regulatory process. As part of its annual self-assessment, the Committee will solicit stakeholder feedback as one of the sources of information for evaluating the ACNW's effectiveness.

## **UPDATING THE PLAN**

The ACNW will continue to conduct top-down planning on an annual basis to identify goals and priority issues for the coming year. Revisions to the plan will reflect input from the Commission, changes in legislation, changes to the NRC Strategic Plan, results from customer surveys and self-assessments, external events, and available resources. As part of its efficiency and effectiveness goal, the ACNW will track, in a separate planning document, outcomes of its operational process improvements, special projects, ideas for working group meetings, possible followup action to past ACNW letters, and items that the Committee considers important but cannot pursue this year due to time or resource limitations.