



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555-0001

September 1, 2005

MEMORANDUM TO: ACNW Members
ACNW Staff

FROM:

Michele S. Kelton

Michele S. Kelton
Technical Secretary, ACNW

SUBJECT:

CERTIFIED MINUTES OF THE 160TH MEETING OF THE ADVISORY
COMMITTEE ON NUCLEAR WASTE (ACNW) JUNE 15-17, 2005

The proposed minutes of the subject meeting have been certified as the official record of
the proceedings for that meeting.

Attachment:

Certified Minutes of the 160th
Meeting, June 15-17, 2005

cc: A. Bates, SECY (O-16C1)
S. Jones, NMSS (T-8A23)
J. Dixon-Herrity, EDO (O-16E15)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555-0001

MEMORANDUM TO: Michele S. Kelton, Technical Secretary
Advisory Committee on Nuclear Waste

FROM: Michael T. Ryan, Chairman
Advisory Committee on Nuclear Waste

SUBJECT: CERTIFIED MINUTES OF THE 160TH MEETING OF THE
ADVISORY COMMITTEE ON NUCLEAR WASTE (ACNW)
JUNE 15-17, 2005

I certify that, based on my review of these minutes¹, and to the best of my knowledge and belief, I have observed no substantive errors or omissions in the record of this proceeding subject to the comments noted below.

Comments:

Michael T. Ryan, Chairman

8/31/2005

Date

⁽¹⁾ Minutes of 160th meeting held on June 15-17, 2005, dated August 31, 2005.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555-0001

August 31, 2005

MEMORANDUM TO: Michael T. Ryan, Chairman
Advisory Committee on Nuclear Waste

FROM: Michele S. Kelton, Technical Secretary
Advisory Committee on Nuclear Waste

SUBJECT: PROPOSED MINUTES OF THE 160TH MEETING OF THE
ADVISORY COMMITTEE ON NUCLEAR WASTE (ACNW)
JUNE 15-17, 2005

Enclosed are the proposed minutes of the 160th meeting of the ACNW. This draft is being provided to give you an opportunity to review the record of this meeting and provide comments. Your comments will be incorporated into the final certified set of minutes as appropriate. Please provide your corrections and comments to me.

Please note that these minutes are being issued in two parts: (1) main body (working copy form) and (2) appendices. The appendices are being sent only to those members who have requested them.

A copy of the certified minutes with appendices will be forwarded to each member.

Enclosure: As stated

cc w/o Encl. 2: ACNW Members
ACNW Staff
J. Larkins, ACRS/ACNW

CONTENTS

	<u>Page</u>
I. Chairman's Report (Open)	1
II. Working Group Meeting on the License Termination Rule (LTR) (Open)	2
III. Discussion of International Commission on Radiological Protection (ICRP) Foundation Documents (Open)	23
IV. Risk-Informing Office of Nuclear Material Safety and Safeguards Activities (Open)	26
V. ACNW Draft White Paper on Low-Level Radioactive Waste (LLW) Management Issues (Open)	28

APPENDICES

- A *Federal Register* Notice
- B Meeting Agenda
- C Meeting Attendees
- D Future Agenda
- E List of Documents Provided to the Committee and Meeting Notebook Contents

CERTIFIED

8/31/2005

By MICHAEL T. RYAN

Issued: 8/31/05

CERTIFIED MINUTES OF THE 160TH MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE JUNE 15-17, 2005

The U.S. Nuclear Regulatory Commission (NRC) Advisory Committee on Nuclear Waste (ACNW or the Committee) held its 160th meeting on June 15-17, 2005, at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. The ACNW published a notice of this meeting in the *Federal Register* on June 1, 2005 (70 FR 31546) (Appendix A). This meeting served as a forum for attendees to discuss and take appropriate action on the items in the agenda (Appendix B). The entire meeting was open to public attendance.

A transcript of selected portions of the meeting is available in the NRC's Public Document Room at One White Flint North, Room 1F19, 11555 Rockville Pike, Rockville, Maryland. Copies of the transcript are available for purchase from Neal R. Gross and Company, Inc., 1323 Rhode Island Avenue, NW., Washington, DC 20005. Transcripts may also be obtained at no cost from the Electronic Reading Room on NRC's Web site at <http://www.nrc.gov/reading-rm/doc-collections/acnw/tr/>.

ACNW Members, Michael T. Ryan (ACNW Chairman), Allen G. Croff (ACNW Vice Chairman), James H. Clarke, William J. Hinze, and Ruth Weiner attended this meeting. For a list of other attendees, see Appendix C. ACNW also invited experts to attend: Eric W. Abelquist, Oak Ridge Institute for Science and Education; Virgil R. Autry, South Carolina Department of Health and Environmental Control; Eric L. Darois, Radiation Safety and Control Services, Inc.; Thomas L. Nauman, Shaw Environmental and Infrastructure, the Shaw Group; and Tracy Ikenberry, Dade Moeller & Associates.

I. CHAIRMAN'S REPORT (OPEN)

[Dr. John Larkins was the Designated Federal Official for this part of the meeting.]

Dr. Michael Ryan, ACNW Chairman, convened the meeting at 10:30 a.m. and briefly reviewed the agenda. He stated that the meeting was being conducted in conformance with the Federal Advisory Committee Act. Dr. Ryan asked that members of the public who were present and had something to share to please inform the ACNW staff so that time could be allocated to them.

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

II. WORKING GROUP MEETING ON THE LICENSE TERMINATION RULE (OPEN)

[Richard Major was the Designated Federal Official for this part of the meeting.]

Dr. James H. Clarke chaired the ACNW working group meeting that focused on guidance revisions to the License Termination Rule (LTR). The goal of the meeting was to position the Committee to be able to provide productive and timely feedback for consideration in the drafting of the guidance revisions. Dr. Clarke also introduced a panel of invited experts who aided the Committee in the review of the developing decommissioning guidance. The experts included Eric Abelquist, Director of the Radiological Safety Assessments and Training Program at the Oak Ridge Institute for Science and Education; Mr. Virgil Autry, currently serving as a part-time technical consultant for the Department of Health and Environmental Control for the State of South Carolina; Mr. Eric Darois, owner of Radiation Safety and Control Services of New Hampshire, providing consulting and training to a broad range of clients; Mr. Tracy Ikenberry, an associate and senior health physicist with Dade Moeller & Associates; Mr. Tom Nauman, Vice President of Shaw Environmental and Infrastructure with the Shaw Group, with experience in nuclear project management, construction, maintenance, and decommissioning.

Introduction — Andrew Persinko, Office of Nuclear Materials Safety and Safeguards (NMSS)

Mr. Persinko explained the goal of this effort was to begin revising the decommissioning guidance in NUREG-1757, "Consolidated NMSS Decommissioning Guidance." The revisions were precipitated by experience gained to date with the LTR and the staff's continuous improvement plan for the decommissioning program. He wanted the day's discussions on decommissioning improvements to be a collegial exchange between the working group and the staff. The staff's current plans call for publishing revised decommissioning guidance for public comment by the end of September 2005.

Restricted Use/Institutional Controls — Robert Johnson and Kristina Banovac, NMSS

This guidance will focus on two primary issues: (1) a long-term control license and (2) a legal agreement. Mr. Johnson stated that the Commission prefers the decommissioning option of unrestricted use; however, the Commission recognizes that a few sites would not be able to meet the unrestricted use criteria. Therefore, the Commission established provisions for the restricted use of a site.

In the guidance, the staff will explain the risk framework that is based on hazard duration and hazard consequences. The staff will create guidelines to show two grades of institutional controls for high risk sites. The staff will describe and use the guidelines to show how risk insights should be used to tailor or customize specific restrictions based on site-specific conditions.

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

The guidance will discuss the flexibility to subdivide a site—that is, divide the site and place different portions of the site under different types of restrictions or different durations for restrictions for a complex site. The appropriate type of restriction will be based on risk insights gained from a dose assessment. The dose assessment will identify prohibited uses for the land and mitigating controls. The duration of controls will be based on the radioactive half life of the source term.

A number of stakeholders suggested including a logic diagram in the guidance. This logic diagram would be used to illustrate the steps in the process of evaluating a restricted use or alternate criteria site, types of institutional controls, and use of NRC options for restricted release. The logic diagram will move from no controls and unrestricted use to controls needed for restricted use, to a graded approach for high-risk and low-risk sites (and the types of controls needed) to the most restricted where NRC controls are used. This diagram has not been developed.

The staff is proposing two options for sites that would be subjected to restricted use and institutional controls. These are basically last resorts used when a licensee cannot find other acceptable ways to decommission a site. The first option is the long-term control license (LTC). This is a new concept for the license termination rule because the license is not terminated. Instead the decommissioning license is amended to become a long-term control license. The site owner remains an NRC licensee. The LTC would contain the conditions placed on the licensee and the land such as the types of land restrictions, monitoring and maintenance requirements, and reporting requirements for the parties involved. Although the license has not been terminated all possible steps for cleanup and protection of the population have been met. The LTC could have a time limit (based on radioactive decay) or it could be perpetual.

The second option for restricted release and institutional controls is the Legal Agreement/ Restrictive Covenant (LA/RC). The restrictive covenant outlines the restrictions on site use and any monitoring or reporting requirements. In the legal agreement, the licensee agrees to abide by the restrictive covenant, to record the RC in the deed, and to not withdraw the RC from the deed. In the LA, NRC agrees to monitor and enforce the restrictions. The LA is only between the NRC and the present owner (i.e., owner at the time of the license termination) and is put into place so that the present owner will not remove the RC from the deed. This will help ensure the RC will take effect at the time the property is sold. Under the LA/RC option the license would be terminated. The LA/RC would become the legal tool for maintaining needed restrictions on the site. This option may be beneficial for a formerly licensed site, where the current owner does not want to become a licensee, or for a licensed site where the owner may want license termination.

In order to use either the LTC or LA/RC options licensees must provide two demonstrations they are necessary. First, a licensee must demonstrate durable institutional controls are necessary. This is done through a calculation that shows doses above 100 mrem/yr would result if controls were not effective or if long half life radionuclides are present requiring controls for more than 100 years. A second demonstration would require a licensee to show they had

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

tried and failed to establish other types of legally enforceable institutional controls and independent third party arrangements. For example, asking state or local governments to take responsibility for the site and having them decline.

The next step for a licensee is to decide whether to use the LTC option or the LA/RC option. The staff prefers the LTC license for current NRC licensees. Under the LTC license, NRC's enforcement responsibility is more clear cut. NRC would enforce restrictions through its licensing and enforcement responsibility/authority under the Atomic Energy Act. The LA/RC is preferred by NRC for a current non-licensee who requests not to be licensed. NRC would enforce the restrictions under authority written into the legal agreement and restrictive covenant. A breach of the LA/RC would be addressed through the courts or NRC could exercise its authority under the Atomic Energy Act. Examples of each option will be provided in the guidance.

The staff described the use of a risk-informed graded approach to justify the location and types of institutional controls. The staff seeks help from the ACNW on the question of when to subdivide a site between restricted and unrestricted release portions. Staff believes a licensee should consider and balance the goal of minimizing the restricted area of the site with defining the area that will ensure long-term protection. Risk insights from dose assessments (extent of residual radioactivity and how it could migrate) will help determine what areas of the site need restrictions on use and what areas need monitoring.

For a privately owned site, it might be necessary to maintain single ownership under the LTC license or LA/RC for a site with both unrestricted and restricted use portions. Maintaining the unrestricted and restricted portions together under the license or RC could help sustain long-term site ownership and controls and therefore long-term protection by keeping a valuable portion of the site for reuse together with the restricted use area. This approach avoids isolating the restricted area and would sustain monitoring programs, if needed. By contrast, a LTC license or LA/RC stigma may discourage future sale of the site and detract from productive future use and revenue for the local community.

A licensee would be required to identify restrictions and controls they would implement. For example the land might be restricted to industrial use rather than agricultural or residential use. The staff is attempting to balance public protection with the reuse of a complex site.

Records retention and availability for sites under institutional controls were discussed. Licensees or site owners would identify records to be made available and retained and who was responsible for maintaining the records. The records would include: long term control plan, monitoring and maintenance reports, inspection reports, and corrective action reports. For a LTC licensee NRC would retain all licensing records as part of the Agency system and make the records available to the public. In the case of a LA/RC, NRC would have primary responsibility for maintaining records and making them available to the public. Others could also maintain records such as site owners or State and local government agencies. Record keeping responsibilities would be outlined in the LA/RA. Duplicating the responsibilities to maintain

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

records would better assure that the records will be preserved and made available to those who use the site in the future.

The guidance will describe site maintenance and monitoring. The staff wants licensees/owners to use a risk-informed approach to maintenance and monitoring. The staff is avoiding prescriptive requirements recognizing that monitoring is very site-specific. The maintenance, control and monitoring activities would become a license condition (LTC) or a provision in the restrictive covenant (LA/RC) option. A long-term control plan that will include detailed plans and procedures for restrictions, monitoring and maintenance will be necessary before either option (LTC license or LA/RC) is exercised. The licensee/owner must combine the prohibited access and land uses that could lead to non-compliance with the human and natural disruptive processes for engineered barriers to form one list of disruptive human and natural processes that could lead to non-compliance and should be a focus of monitoring and maintenance. For each disruptive process the licensee/owner should identify the type of monitoring, its location, frequency and duration. For each of the disruptive processes the licensee must identify maintenance that would mitigate the disruptive process. If engineered barriers are planned the type of maintenance to maintain the barriers should be described or the fact that it is robust and durable (no maintenance required) justified.

Sufficient financial assurance is required for restricted use/institutional control sites. For both the LTC license and the LA/RC a fund should be established that would produce an annual average income that covers the annual surveillance, control, and maintenance costs, NRC fees, and trustee expenses. The 1 percent rate of return used for uranium mill tailing sites is being proposed.

The final section of the proposed guidance is seeking advice from affected parties on institutional controls. The guidance will include the process of seeking advice using a site-specific advisory board or other methods. The staff plans to develop guidance on the types of information the licensees could share with affected parties, so that the parties understand the restricted use decommissioning plans and can provide advice on the various aspects of the institutional controls. The licensees process for seeking advice could be iterative in nature. The process could begin by informing and seeking advice from affected parties at a general level, then as the plans mature becoming more detailed as specific plans and analyses are developed. Licensees will be required to document in its Decommissioning or License Termination Plan how the advice of affected parties was sought and incorporated. However, a licensee is not required to reach a consensus with the affected parties. Licensees should add a discussion on undue burdens resulting from the restrictions/institutional controls. Licensees should clearly identify the permitted (safe) uses of the site that may be beneficial to the affected parties, as well as, the adverse uses that must be restricted to protect public health and safety. This information could allow affected parties to determine whether or not the institutional controls impose an undue burden on them.

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

The staff concluded by requesting the Committee's advice on subdividing sites and the risk-informed approach to monitoring.

Roundtable Discussion on Restricted Use/Institutional Controls

During the roundtable discussion the following points were made by the ACNW members and the invited experts:

1. View restricted release as a temporary condition. The idea of a long-term control license is a good one. It will cause the licensee to take a hard look at paths towards an unrestricted release license, freeing the land for future sale. (Mr. Abelquist)
2. Consider the case of independent spent fuel storage installations (ISFSIs) at decommissioned nuclear power plants. These ISFSIs could be subdivided out of the rest of the plant site, kept under long-term care, while the majority of the plant site is released. Consider to whom a LTC license or LA/RC site might be transferred. How do you evaluate the viability of the company or individual to take control of the site? Some thought should be given to what steps must take place if a licensee or deed holder (LA/RC) goes bankrupt. (The NRC staff believes the trust fund will continue site maintenance.) (Mr. Nauman)
3. Much of what the staff is proposing was done in South Carolina for the Allied General Reprocessing Facility. It was contaminated with uranium from tests. (The plant never reprocessed nuclear fuel.) The decontamination criteria were 15 mrem/yr whole body and 4 mem/yr from groundwater, the U.S. Environmental Protection Agency's (EPA's) criteria in the late 1970s. There was a restrictive covenant placed on the facility. It was turned over to the State of South Carolina for industrial development. It could be used for low-level waste storage or source manufacturing for example. The rest of the site, some 1,600 acres, was not contaminated and carried no restrictions except for some ground water monitoring. Before Allied Signal was released from the license they agreed to provide financial assurance for the monitoring and impose restrictions on the old facility. Today, a wood products industry is on the 1,600 acres, and a nuclear laundry will be moving to the site. (Mr. Autry)
4. It was suggested that the Agreement States have a wealth of information on decommissioning that the staff should explore. Nuclear shipyards and reactors are also being decommissioned in South Carolina. It was also suggested that a distinction be made between the traditional possession—only license and the new LTC license. (Dr. Ryan)
5. In decommissioning nuclear power plants most are doing a variant on partial site release or subdividing. The plants are taking large parcels of land through the decommissioning process and removing them from the license. Radiation surveys will still be required prior to putting in place a new type of license arrangement, LTC or LA/RC. Staff may wish to

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

give some guidance in how to go from a LTC license or LA/RC site to a site that can be released for unrestricted use. (Mr. Darois)

6. In the risk-informed approach to monitoring, the staff intends to give general (not prescriptive) guidance. It is a process the licensee should think through. How could a site fail? What sort of monitoring should be used? What precursors to failure would exist? The monitoring program should make sense in a site-specific way. (Mr. Ikenberry)
7. What happens during the monitoring phase, if unanticipated variations are observed? How are modifications made and written into the LTC license or LA/RC? The LTC license has a 5-year renewal built into the process, so experience would be reviewed and modifications made. If experience warrants course corrections, the license conditions for either LTC or LA/RC would be modified. Criteria might be needed to decide when a course correction is needed. There might be instances when monitoring should be terminated. (Dr. Hinze)
8. The time periods for renewal might be varied—shorter at the beginning of a decommissioning project, then longer intervals if no radioactive migration is found or expected. The half-life of the source may also influence renewal. Depending on decay rates after 10 years, the site may be ready for unrestricted release. The staff will provide an oversight presence at the restricted use sites and would want annual reports on the state of the site. Depending on how quickly the source term decays, the risk will decline. The need for financial assurance over time will decline with the source term. (Dr. Ryan)
9. What criteria will licensees use to decide if engineered barriers should have periodic maintenance versus very robust barriers that require little if any maintenance? Should a site become a candidate for unrestricted release? Could a very robust barrier create a problem if it must be removed? Barriers should be site specific and source term specific. The staff does have a preference for robust barriers because they could reduce the cost of maintenance, the reliance on institutional controls, and the possibility of replacement costs should the entire barrier fail. If you had a site where unrestricted release was a reasonable possibility, you would not want to engineer in a possible impediment. (Mr. Croff)
10. The Committee encouraged the staff to have new licensees build new facilities with the end in mind and to look for design features to make decommissioning easier and more effective. The staff will issue rulemaking in the near future to prevent legacy sites from occurring. A closer look at operations and financial assurance will be part of the package which aims to prevent restricted use sites. The effects on property values for subdivided sites might be considered. (Dr. Weiner)

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

Engineered Barriers — David Esh and Robert Johnson, NMSS

Engineered barriers are not part of the LTR, but the staff believes the topic is related to restricted release sites. There is minimal guidance on the use of engineered barrier systems (EBS) in the current guidance (NUREG-1757). Current guidance was an early attempt to risk inform design of EBS. Licensees were simply asked to evaluate the contribution of the barriers to performance. In an analysis of site performance, institutional controls are not assumed to be in effect. By contrast the EBS is assumed to degrade over time. The staff has a preference for robust engineered barriers. Licensees will be encouraged to look at existing guidance for erosion protection covers used for uranium mill tailings disposal cells as a model for the EBS.

The staff is trying to provide additional guidance on the use of EBS in a risk-informed and flexible way that avoids being prescriptive. The staff wishes feedback from the ACNW on the depth and breath of the guidance they should offer. The staff is preparing guidance in five areas.

The guidance will provide a description of the risk-informed graded approach to engineered barriers. Emphasis will be placed on the need for the technical basis of the EBS performance when hazards are being significantly mitigated by the barrier and when the hazards from the material is long-lived, over long temporal scales. The risk-informed graded approach depends on an accurate assessment of the performance of the barriers with maintenance (institutional controls) and without maintenance (no institutional controls) with resulting foreseeable disruptive conditions. The robustness of an EBS and the amount of technical basis provided for an EBS should be commensurate with the amount of risk reduction provided by the barriers. The amount of risk reduction from a barrier will be determined by a performance assessment including uncertainty in performance.

The second section of the EBS guidance will describe the barrier analysis process. It will provide a summary of the calculations needed to develop risk insights for the barriers, and regulatory assumptions pertinent to various scenarios. The analysis of the EBS should identify and evaluate conditions or processes adverse to performance that result in non-compliance. This would include an analysis with and without institutional controls such as monitoring and maintenance. The effect natural processes have, such as erosion on barrier performance over time would be analyzed. Given the loss of institutional controls, the analysis must consider the effect of disruptive natural and human processes on the barriers.

The staff was urged to describe the type of analysis expected, be it deterministic or probabilistic, and when they might be appropriate.

The third section of the EBS guidance will give the staff's expectations for the technical basis for EBS performance. Significant uncertainty exists concerning predictions of service life and long-term degradation rates for EBS. The staff expects multiple lines of evidence for barrier performance (e.g. field and laboratory experiments, analogs, and expert judgement). The design, features, and functionality of the EBS should be fully described. The technical basis for

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

barrier performance considering the degradation mechanisms should be provided. Barrier performance must consider the uncertainty in parameters and models. Parametric or EBS component sensitivity analysis should be performed to identify how much degradation of the EBS would result in non-compliance. Model support must be provided for the EBS performance (e.g. analogs, experiments, simple engineering calculations). The technical basis for engineered barrier performance must consider combined and synergistic effects resulting from the real world conditions expected for the barrier.

The fourth section of the EBS guidance will lay out degradation mechanisms and typical performance for engineered barriers. The staff asked the Committee whether or not this section was overly ambitious. Is there value in providing the typical levels of performance? In the guidance, degradation mechanisms will be summarized for common barrier types and materials, and typical levels of performance for these barriers will be provided. The degradation mechanisms provided may not be comprehensive due to the large variability in conditions and processes from site to site, but they will represent all the main degradation mechanisms typically encountered. Ranges will be provided for typical levels of performance, that will help provide direction for when more or less technical basis may be needed. Some of the common barriers would include—engineered caps, geomembranes, concrete, cement, and grout.

The final section of the EBS guidance will be a summary of existing guidance. It will provide a list with a brief summary for each document, so that a licensee or NRC staff knows where to go to obtain additional information. The staff asked for Committee guidance on how broad the summary of existing guidance should be? The staff noted that in NUREG-1573, the low-level waste performance assessment methodology, contains five pages of references on engineered barriers.

Roundtable Discussion on Engineered Barrier Systems

During the roundtable discussion, the following points were made by the ACNW members and the invited experts:

1. It is important to describe the various EBS and how they function, especially in a certain environment. The uranium mill tailings remedial action (UMTRA) program has a long-running attempt to look at the performance of barriers. The Superfund sites have used hundreds of EBS and would be a good source of information. Current experience with EBS is limited to decades. (Dr. Clarke)
2. There has been considerable experience with EBS at defense facilities. The staff will give guidance on the elements that must be considered in an analysis, but will not specify a particular model or computational tool. Dealing with hazardous chemicals is being handled by EPA. (Dr. Weiner)

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

3. It was suggested that waste form be included in the roster of engineered barriers. Thought should be given to improved EBS in the future. Should a licensee commit to the current range of barriers? (Mr. Croff)
4. When the staff discusses uncertainty of assessing performance over long temporal scales, what is meant by "long"? For decommissioning regulations long is 1000 years; however, "long" will remain a relative term geared to the specific problem and specific barrier under consideration. (Dr. Hinze)
5. Trying to describe typical levels of performance for barriers is difficult. Some aspects are best described qualitatively while others can be described quantitatively. A multi-attribute analysis tool that combines all aspects and weights them approximately might be useful for licensees. (Mr. Ikenberry)
6. In analyzing the potential for tritium migration during decommissioning of nuclear power plants, the retardation potential of soils, structures, and various backfills was considered and analyzed. (Mr. Darois)
7. Engineered barriers can be used in an effort to achieve unrestricted release. The staff should seek to establish performance objectives for the barriers. (Mr. Autry)
8. Would the EBS be part of the mass averaging used to meet site release criteria, (e.g., a barrier like backfill)? Although an EBS is not a part of the final site survey, an EBS does fix radionuclides in place, thus preventing groundwater transport.

When underground tanks or spent fuel pools are grouted, the radionuclides are fixed in place. Given an appropriate analysis, a license could still seek unrestricted release of the site. (Mr. Nauman).

9. Look at the success DOE has had using EBS such as clay liners and caps. (Mr. Abelquist)
10. The attendees are encouraged to send in or note material that would be useful in a staff-compiled a bibliography on uses for engineered barriers. (Dr. Clarke)

Onsite Disposal of Radioactive Materials — Duane Schmidt, NMSS

The staff will provide guidance for three options approved by the Commission for on-site disposal:

1. Approve on-site disposals under the "few millirem" per year dose constraint as this should not require decommissioning and supports the ALARA (as low as reasonably achievable) provision.

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

2. Approve on-site disposals under a 100 mrem/yr dose constraint with additional financial assurance.
3. Approve on-site disposals with a 25 mrem/yr constraint of mainly short-lived radioactive materials that will significantly decay in a few years without requiring additional financial assurance so long as the likelihood of creating a legacy site is low.

In general, the Commission-approved options for on-site disposals will be the starting point for the development of guidance to assure that future burials are not likely to result in legacy sites. The guidance needs to consider how to link the need for additional financial assurance with a dose-based criterion; currently financial assurance requirements are specified in terms of quantity of radioactive materials. Guidance will address the potential for (early) license termination before significant decay of short-lived materials has occurred. An assumption for allowing on-site disposals of short-lived materials is that significant radioactive decay will occur, and additional financial assurance is not needed. Guidance is needed to assure that adequate records of on-site disposals are developed to support future decommissioning, and that implications of on-site burials on current operations and compliance issues are understood by the licensee. Guidance may be needed on the assessment of the degradation of containment for on-site disposal prior to decommissioning if that containment is assumed to constrain radioactive contamination migration or to minimize subsurface contamination.

Following an April 2005 workshop with stakeholders, the staff was given comments to help clarify the language used in the on-site disposal options. These include the following:

- Define on-site burial to differentiate between on-site storage and disposal or burial
- Define short-lived radionuclide
- Describe financial assurance needed
- Provide guidance on when on-site disposals must be retrievable
- Define a "few millirem."

The staff seeks the Committee's advice on these definitions.

Roundtable Discussion of Onsite Disposal of Radioactive Materials

During the roundtable discussion the following points were made by the ACNW members and the invited experts:

1. How is the source term treated for onsite disposals? Some sources may be long lived such as uranium-contaminated soils. The dose that results from the source term must be considered, say a "few mrem/yr, 25 mrem/yr, or 100 mrem/yr. Given an acceptable source term, what survey guidance can be provided? (Mr. Abelquist)
2. A balance must be met between operations phase of a facility, leaving a problem for decommissioning, and disposing of very low levels of radioactive materials that could be

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

left in place. This guidance will help strike that balance. The guidance should also address in situ disposal of underground pipe; where contamination levels are appropriately low. (Mr. Nauman)

3. South Carolina has allowed on-site disposal at nuclear power plants. The material disposed of included pond sludge, floor drain discharge, steam generator tubing and incidental hardware. The dose guideline adopted was 5 mrem/yr from the burial site. The predominate isotope contaminating the waste was Co-60, which decays to insignificant levels over a relatively short period of time. The waste was placed in engineered trenches with engineered covers. Some groundwater monitoring was required initially, when no mitigation of radionuclides was found, the formal requirements were relaxed. (Mr. Autry)
4. When using a dose limit, the guidance must outline the scenario used to calculate the guidance. What population or group gets the exposure? This will be critical in defining what is meant by a few millirem. Concerning half-life considerations, thought should be given to the time from disposal to decommissioning to account for radioactive decay. If the time frame is 5 years versus 20 years, it would have an impact on the half-life consideration, the staff may want to consider a sliding scales, based on the time before decommissioning burial occurs for selecting appropriate half-lives. All disposals are retrievable its just a matter of cost. Guidance might warn licensees that just because a disposal site meets radiological criteria, it might not meet other criteria, such as bulk of construction debris or metal content. (Mr. Darois)
5. When using onsite disposal, the use of an engineered barrier should be considered. The guidance documents should cross reference the engineered barrier guidance with the onsite disposal guidance. (Mr. Ikenberry)
6. The guidance should explain when it is appropriate for onsite storage to become disposal. There should be a deliberate plan for on-site disposal. (Dr. Ryan)
7. When dealing with small doses of a few mrem/yr, guidance should contain instructions on how to treat the uncertainty in the dose calculation. Concerning "retrievability," should you design for it, or ensure it is not precluded? (Dr. Weiner)
8. For on-site disposals the staff should give detailed guidance on surveys and monitoring requirements. (Dr. Hinze)

Scenario Justification Based on Reasonably Foreseeable Land Use (Realistic Dose Scenarios) — Christopher McKenney, NMSS

The types of modeling and scenario construction approaches have been changing over the past ten years. The staff has been trying to continuously improve realism in the analysis by allowing flexibility. Licensees are allowed to use more realistic scenarios for compliance, rather than requiring the use of bounding scenarios. The staff is moving away from doing a residential

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

farmer bounding scenario for compliance determination. The staff is looking at stakeholder-driven, realistic land use scenarios.

The staff believes it can use a risk-informed performance-based approach, that is based on reasonable assumptions of what could happen at a site in the next few decades as the compliance scenario. The compliance analysis will also include unlikely scenarios that could occur over a long period of time at the site to give confidence to the decision-makers that public safety is assured,

Changes to this guidance require a tone change, not a major revision. The tone will shift from a conservative approach to a more realistic dose scenario. The guidance will include information on what is considered foreseeable; what is considered unlikely; what level of analysis is needed for an application; what level of justification is needed; and how will the review be conducted.

The staff emphasized that the use of reasonable scenarios will not be used to circumvent the need for institutional controls or release restrictions. In some cases the licensees may have to use conservative assumptions. Guidance will be provided to help licensees decide what assumptions are appropriate for their dose scenario.

Roundtable Discussion Realistic Dose Scenarios

During the roundtable discussion the following points were made by the ACNW member and the invited experts:

1. The guidance describes what can go wrong and what the consequences are, but it does not address how likely the scenario is. Will guidance address the middle question of the risk triplet? Currently the staff is planning on having general categories such as likely and unlikely with a logical description. It was suggested that licensees get guidance on what "very unlikely" or "highly likely" may mean. There needs to be a bar for the information requirements a licensee needs. The staff will separate scenarios into categories of reasonable, likely, and unlikely, and those not expected to occur. Guidance should also be provided on how to handle intrusion scenarios, both intentional and inadvertent. The staff noted that intentional intrusion is usually not used as a basis for compliance. (Dr. Ryan)
2. It was noted that if a licensee can meet the bounding case, they probably will not use realistic scenarios. There will be few licensees that will use realistic scenarios. Be sure to define what you mean by realistic. (Dr. Weiner)
3. What does the staff consider the foreseeable future? It depends on the rate of change in the local area; the staff is considering a few decades. The staff expects some justification for future land use, such as estimates from land use planners and locals. (Dr. Clarke)
4. What is the experience in the strength of deed restrictions? Deed restrictions are placed on restricted release sites, if someone were to try and violate a deed restriction, NRC would

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

become involved. Deed restrictions are used on lower-risk sites, that are no longer licensed. (Dr. Hinze)

5. When the Barnwell low-level disposal site closes, the land will be transferred to the State of South Carolina. Deed restrictions will be placed on the disposal areas and additional contaminated lands associated with the Barnwell facility. It is important to work with local government on any code or ordinance they may have on future land use. (Mr. Autry)
6. When you select the reasonably foreseeable scenarios, does that give you flexibility in selecting the critical group? The critical group would be derived from the critical scenario. (Mr. Ikenberry)
7. There may be merit to considering a realistic scenario for the first 30 years at a decommissioned site, then consider the resident farms for years 30 to 1000. This allows isotopes like tritium to decay to negligible levels. (Mr. Darois)
8. How many license terminations under review now use a site specific scenario versus default values? Most of the complex sites use site-specific analysis. (Mr. Nauman)
9. Most licensees would like to use the derived concentration guidelines (DCGLs) that are provided in the screening models to see if their site is ready for release. If the DCGLs are not cost effective then licensees would tend to use surveys and sample instruments outlined in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). There will be licensees that simply want flexibility and guidance to change several parameters and stick with the default scenario, the resident farmer. This is especially true for simple sites without much residual contamination. The staff believes this suggestion would make a good research request. It has been considered as a research project by the staff in the past. The staff is willing to discuss a particular situation on a case-by-case basis. Guidance would be useful for simple sites to point out what parameters to attack. (Mr. Abelquist)

Public Comment by Mr. John Greeves to the Working Group

Mr. John Greeves encouraged the staff and the Committee to take a close look at realistic dose scenarios. There are a number of sites (10 to 12) with uranium and thorium contamination that will rely on realistic assessments. It is important to define exactly what is a realistic scenario.

Approach for Identifying Sites With High Potential for Subsurface Contamination (Identification of Potential Legacy Sites) — James C. Shepard, NMSS

This guidance is designed to prevent future legacy sites that would contain long-lived contamination. Before definitive inspection guidance related to legacy site prevention can be developed, the types of sites that have the potential to become legacy sites must be defined. Potential legacy sites do not constitute an immediate threat to public health and safety.

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

During FY 2005, operating sites will be screened using a "hazard-informed" approach. This evaluation identifies the likelihood that a site has the potential to generate significant subsurface contamination that must be remediated before license termination. This activity will provide guidance to the inspection staff on which types of sites and site activities will need "enhanced" inspection efforts aimed at preventing and mitigating spills and subsurface contamination. This guidance is being developed to support planned rulemaking to strengthen 10 CFR 20.1406.

The methodology will identify those types of sites, facilities, and facility operations that have the greatest potential for generating subsurface contamination. For example, there must be enough liquid (e.g., water) in the facility to move contaminated to the subsurface. There must be a subsurface environment that allows contamination transport. Other features of interest include procedures for identifying spills and dealing with cleanup, and a physical design for a facility that will confine a spill. The full range of appropriate parameters will be identified through various forms of expert elicitation. In FY 2006–FY 2007 the staff will revise or develop NRC inspection guidance and procedures to identify precursors to subsurface contamination. Guidance could also include specific design items for new facilities and licensee procedures and design modifications for existing facilities.

Roundtable Discussion on Preventing Future Legacy Sites

During the roundtable discussion the following points were made by the ACNW members and the invited experts:

1. Explore using a multi-attribute utility analysis rather than a hierarchical ranking method in picking potential legacy sites. (Dr. Weiner)
2. In terms of identifying potential sites, geoparameters should be given primary consideration. (Dr. Hinze)
3. When siting a facility groundwater vulnerability should be a given consideration. (Dr. Clarke)
4. Underground pipes and tanks are an important source of contamination at nuclear power plants. Care must be taken in monitoring these sources. (Mr. Nauman)
5. Care must be taken in monitoring underground tanks, they can contain residual radioactivity, plus rain water creating a large cleanup project. Not only must one look for leaks, but incursion of rain water and groundwater could cause problems. (Mr. Autry)
6. Care must also be taken with internal tanks, leaks or too porous concrete floors will not stop tritium. Spent Fuel Pool have also been found leaking at a number of nuclear power plant sites. (Mr. Darois)

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

Plans For Developing Guidance on Groundwater Monitoring — James C. Sheperd, NMSS

The approach is to develop guidance for groundwater monitoring programs in three phases, as a function of the life cycle of the facility, in three phases: (1) design, construction, and operation; (2) decommissioning; and (3) long term post-remediation. The guidance development will proceed in parallel with the rulemaking on groundwater monitoring.

Licensees will need to define minimal subsurface characterization and monitoring plans, and how those should be modified in the event groundwater contamination does occur. The guidance will provide information on how to establish a baseline description of the subsurface, including geology, hydrology, and water quality; how to conduct routine monitoring during normal operations; and how to define the scope of increased monitoring after no events or the detection of contamination in the groundwater. In addition, guidance on technical details such as well construction and sample handling will also be developed. If an ongoing leak were discovered, additional financial assurance to ensure decommission may be required.

Two NRC offices, the Office of Nuclear Material Safety and Safeguards and RES are defining a monitoring program that will support the performance assessment model used in the dose calculation. These dose calculations are used in license termination determinations and for compliance determination for the sites released under restricted use.

Roundtable Discussion on Developing Guidance on Groundwater Monitoring

During the roundtable discussion the following points were made by the ACNW members and the invited experts:

1. There is a wealth of knowledge on groundwater monitoring experience for hazardous sites under the EPA's Resources Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) programs. Using this experience in the development of NRC's groundwater monitoring guidance will help to make it risk-informed and performance-based. (Dr. Clarke)
2. Guidance on groundwater monitoring should contain information on geologic and hydrologic conditions beyond the confines of the site. Guidance on the breadth of groundwater monitoring should be included. The challenge will be to tailor the program for each individual site.

Concerns were also raised about monitoring wells becoming conduits for surface and near surface contamination to the subsurface groundwater. Thought should be given to noninvasive techniques to characterize the subsurface, and attention should be given to sealing the monitoring wells. The monitoring program should be thorough enough to determine the direction of groundwater flow. (Dr. Hinze)

MINUTES

160TH ACNW MEETING

JUNE 15- 17, 2005

3. Groundwater monitoring plays a broad role in site characterization. It is a major factor in long-term performance monitoring. Groundwater monitoring would indicate a problem with engineered barriers such as a cap over a contaminated area. The staff faces the challenge of having licensees consider site groundwater monitoring at the beginning of a facility's life. (Mr. Croff)
4. Sites are required to do a survey before operations begin to determine how much natural occurring radionuclides are present. Sites that are contaminated can also determine the extent the contamination is manmade versus naturally occurring. This is done by upstream monitoring (of groundwater and predominate wind direction) of areas not effected by plant operations. For survey results that are close to the detection limit the actual number observed is reported. Where meaningful readings do not exist, there are no reported results. (Dr. Weiner)
5. What triggers a groundwater monitoring campaign, especially if no indication of subsurface contamination exists? The guidance should create a minimum program that will allow a determination on whether or not more monitoring is necessary. The program should indicate the direction and speed on subsurface flow. It will help decide how often to sample. Care must be taken not to expend too much effort to prove the negative, that no contamination exist. Guidance on when it is acceptable to terminate groundwater monitoring should be included. (Mr. Abelquist)
6. You should only install a well when it is necessary. They can be a path for the contamination. Regulations governing well installation and removal are very prescriptive in South Carolina. Only qualified people should be allowed to do either. (Mr. Autry)
7. Be aware of how complicated fractured bedrock can make groundwater monitoring. Before starting a monitoring program identify the suite of radionuclides you are looking for. Monitor wells closely, do not allow them to become yard drains. The characterization of groundwater before operations begin is very important. The Electric Power Research Institute (EPRI) is about to issue its own guidance on groundwater monitoring. It addresses many of the same issues the NRC guidance will, although the focus is nuclear power plants. (Mr. Darois)
8. An adequate understanding of groundwater flow and direction should be in hand before operations. Attention should be given to leak detection of spent fuel pools, underground piping and buried tanks during operations. (Mr. Nauman)
9. Ensuring guidance on decommissioning issues reaches licensees at the design stage remains an issue. Ensure licensees design with the end in mind. (Mr. Ikenberry)
10. Monitoring groundwater should be integral to all phases of a facility. Guidance should help in monitoring in the design, operation, and decommissioning phase of a facility. (Dr. Hamdan)

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

Intentional Mixing of Contaminated Soil — Derek Widmayer, NMSS

The staff believes the overall approach to site cleanup and the mixing of soils is that it follows the concept of contamination being removed to levels that are as low as reasonably achievable (ALARA). Before mixing, a licensee should show that removal of contaminated soil would not be reasonably achievable. The use of intentional mixing is flexible and can be used in the context of a risk-informed, performance-based approach to decommissioning, where the analysis includes considerations of risk from other contaminants on the site, the future or potential land use, and costs of remediation activities. The staff will allow intentional mixing to meet the LTR release criteria in limited circumstances on a case-by-case basis.

The staff seeks an overall approach in decommissioning plans. The staff does not expect to see mixing as a primary means to meet release criteria. The staff expects to see an approach that outlines decommissioning of buildings, removal of materials from buildings, and how intentional mixing fits in to the overall approach. Feedback from the April 2005 stakeholders meeting suggested licensees wanted no limitations on the use of mixing. ACNW guidance on this issue is sought by the staff.

The staff's evaluation criteria for intentional mixing was discussed. The footprint area containing mixed soil should be the same size or smaller than the footprint defined at the start of remediation that includes the contaminated areas that will be intentionally mixed. Clean soil from outside the site should not be used (unless as a last resort), and use of clean soil as part of the defined footprint should be minimal. The staff will evaluate the type of machinery to be used and the methods to be employed with the equipment to achieve a homogeneous mix of soil. The staff will examine the locations of uncontaminated surface or subsurface soil that will be incorporated into the footprint. The staff will examine any slag or larger non-soil like waste materials that will be included in the mixed soil, and how it will be made more soil like, or why it is appropriate to forego additional preparation prior to mixing. Licensees must describe the instrumentation used to support the mixing operation and the uncertainty bounds for the equipment and determine when the mixing has reached remediation goals.

Mixing of other material, such as slag, besides soils was also discussed. In general, contamination in slag is homogeneous. Would the rubblization of concrete be appropriate for mixing? (To date, the Commission has not been in favor of such an approach.)

The staff would examine the final configuration of the mixed material. Was it placed in a trench or disposal cell? The staff would also examine any temporary storage sites the mixed soils might occupy.

When the decommissioning process involves intentional mixing, the staff should include the stakeholders in discussions concerning the use of mixing as part of site remediation and the institutional controls process.

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

The ACNW was asked by the NRC staff to comment on the use of a soil cap over intentionally mixed material. The soil cap could reduce uncertainty in modeling and contribute to maintaining doses ALARA. The Committee also was requested to consider whether to allow mixing on a limited basis in small areas. The staff should give thought to creating a separate database that would record the uses of intentional mixing.

Roundtable Discussion on the Intentional Mixing of Contaminated Soils

During the roundtable discussion, the following points were made by the ACNW members and the invited experts:

1. At this point the staff can conclude the removal of soil is not reasonably achievable if there is no funding or there is no burial facility available. There may be cases where it is more risk-informed to concentrate resources on the removal of higher hazard chemicals, and allow mixing of radioactive soils. Different terminology may be more appropriate for the mixing of material like concrete and slag instead of soil. (Mr. Ikenberry)
2. When rubblization is considered the amount of radiation present was averaged over the total volume of concrete and soil at decommissioned nuclear power plants. This was the basis for using concrete as a backfill. States also set limits on how much radioactive material can be in mixed material like concrete (the size of the concrete pieces may not matter). Hard and fast rules on this topic may not be appropriate. Concerning soil clogs over mixed soil, intruder scenarios, and erosion could complicate the dose modeling. (Mr. Darois)
3. Intentional mixing of contaminated soil will be difficult for the public to accept. Moving truckloads of soil across the nation is not a very good idea either. State regulations may pose an obstacle to mixing. Sound reasoning and good science will be needed to make this work. The staff noted problems have already been encountered with State regulations and public acceptance. (Mr. Autry)
4. Blending, crushing, and sizing solid materials like rock, concrete or slag is costly and difficult. Does it really result in a net risk reduction? Justifying mixing based on a lack funds is a slippery slope as funding will be tight on all decommissioning projects. (Mr. Nauman)
5. The use of mixing applies only to a small number of sites. With adequate sampling hot spots can be removed; there would be no need for mixing. Removing the hot spots is applying the ALARA principle. Removing and mixing soils will expose workers to the contamination. The benefit from mixing is questionable. Public acceptance will be a real challenge. (Mr. Abelquist)
6. Mass and volume averaging of radioactive contamination has been used in disposal and decommissioning projects. Current guidance on averaging exists. Blending seems

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

reasonable if risk reduction can be shown. Crushing rock and concrete to form a homogeneous soil does not make sense given potential worker exposures to industrial accidents and radiation dose. (Further examples of opposition to rubbleization and mixing by State regulation and the public were mentioned for several nuclear power plant decommissioning projects.) There are additional Federal, State, and local requirements that also must be considered such as disposal for construction debris, and hazardous chemicals when deciding if it is practical to mix (debris) for radiological reasons. (Dr. Ryan)

7. When doing a risk analysis be sure to include all risks (i.e., radiological and nonradiological). The risk of industrial accidents associated with heavy equipment are considerable. (Dr. Weiner)
8. The staff will considered mixing in three dimensions. The soil must be mixed homogeneously throughout as tilling the surface may not mix the contamination enough. (Dr. Hinze)
9. The number of licensees that may actually proposed mixing will be limited. Public acceptance may indeed be the self-controlling factor. Is interest in the concept really worth the trouble? The demand for this option is uncertain. (Mr. Croff)

Decommissioning Experience, Lesson Learned — Rafael Rodriguez, NMSS

This discussion centered on capturing lessons learned from past decommissioning projects. This is not a guidance document. A specific goal is capturing good practices, and bad experiences in decommissioning nuclear power plants. It may be another generation before the next nuclear power plant is ready for decommissioning, given license extensions.

The staff has been cataloging lessons learned experience since 2002. Appendix O to NUREG-1757 gives decommissioning experience in a question and answer format. The staff also updates the Commission in an annual briefing on decommissioning experience. The Commission has requested the staff to collect lessons learned from decommissioning experiences. The staff is in the process of identifying and immortalizing past decommissioning experience from NRC staff, the industry, and Agreement States.

The staff expects to make the experience database available as an appendix to the decommissioning guidance report (NUREG-1757) and as an electronic document available on a Web page. The staff as created a group to screen the experience database for lessons learned.

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

Roundtable Discussion of Lessons Learned

During the roundtable discussion the following points were made by the ACNW members and invited experts:

1. In the future, the staff will post on the Web site the thousands of lessons learned from decommissioning projects. The Web site will have a search engine to make it user friendly. The staff is considering publishing a paper-copy NUREG report with the lessons learned. The NRC staff will edit the information contained in the lessons learned database. (Dr. Hinze)
2. Each lesson will be presented in a common format. Each introduction to a lesson will summarize which licensees will find the information useful and where similar lessons can be found. (Mr. Croff)
3. It was suggested that the lessons learned be organized using the same table of contents as the guidance documents. (Dr. Ryan)
4. NRC staff will decide what is or what is not a lesson learned. They will concentrate on positive and negative experience that may be of help to multiple licensees. (Dr. Weiner)
5. The staff will take the lead in creating the database. It is important to get the views of practitioners. Practitioners should be given an incentive for participating. (Dr. Ryan)
6. A table of contents will be useful, but the breadth of experience goes beyond the topics in the guidance documents. Care must also be taken when someone claims to have discovered the best way to accomplish a decommissioning project. Some of the information could be exaggerated. (Mr. Darois)
7. A common theme in the current group of lessons learned include: How do we reach finality in decommissioning? (Mr. Autry)
8. Some of the lessons learned by the industry may be propriety in nature and difficult to share. It will be difficult to screen for the really best practices. (Mr. Nauman)
9. The Department of Energy (DOE) formed a D&D Science Consortium in 2002 to share decommissioning methods. This group avoided listing lessons learned because of the difficulty that would be involved. The D&D Science Consortium will refer interested people to those with experience in a certain process. The staff explained that the lessons learned database will cross reference other sources of information. (Mr. Abelquist)
10. Even though it may be difficult there is merit in documenting and disseminating lessons learned. A problem will be determining the best way to collect information, how to do a

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

quality control check on the information received, and the best way to disseminate the information. (Dr. Clarke)

Roundtable Wrap-Up

The working group participants highlighted what they believed were significant outcomes of the days discussions. Comments given to Dr. Clarke at a later time would also be welcomed.

1. Does the current dose-based requirements for decommissioning (LTR) add unnecessary complexity in cleaning up simple, non-complex sites? For simple sites screening criteria based on DCGLs may be all that is needed. Using a dose criteria that is near background levels adds complexity to determining when a site is finally decommissioned. (Mr. Abelquist)
2. In the next 2 years, many of the large commercial decommissioning projects will end. It is important to capture the experience gained over the past decade in the decommissioning guidance. The public's resistance to the question of mixing should be recognized. EPRI might get involved in the debate over mixing contaminated soils. (Mr. Nauman)
3. The new guidance being proposed will be a great help to the decommissioning community, especially the Agreement States. Agreement States have limited staffs and experience; the guidance will be something they can rely on. NRC should provide more training in the use of decommissioning tools for the industry. The need for guidance on mixing is questionable: a case-by-case approach is probably best. (Mr. Autry)
4. The experience gained in decommissioning should find its way into the design of new facilities. It is important to capture the historical data on decommissioning. The use of onsite disposal should be used to get attention. The use of realistic dose scenarios is necessary; there is a need for guidance in how to accomplish them. It is time to update the old dose modeling tools like RESRAD code (for residual radioactivity). For any facility, consideration for groundwater needs attention from "cradle to grave." There is still a need for a clearance rule; it should be part of a risk-based decommissioning philosophy. (Mr. Darois)
5. The risk-based approach, the guidance is based on is a very good idea. NRC should take care not to compartmentalize the development of guidance documents. They are interrelated. NRC should keep the guidance simple and easy to use. The concept of soil mixing has the potential to help some parties. (Mr. Ikenberry)
6. Given the right framework, with appropriate limits, mixing has a role. The guidance should provide a risk-informed sensible approach to decommissioning. (Dr. Ryan)
7. Many of the issues covered will be the result of a policy decision. The use of mixing is an example; whether to design EBS for the long-term or a short time is another. (Mr. Croff)

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

8. The compliance period for decommissioning will be very long in many cases. Some of the materials will prove to be a hazard far into the future. The long time frames will exceed our experience with just about anything. There may be merit in designing facilities so that they can be monitored and maintained. (Dr. Clarke)
9. The staff should continue its strong ties with decommissioning practitioners. As the science advances guidance should be updated. Seek the experience gained by the DOE in the decommissioning field. It is time to improve RESRAD. (Dr. Weiner)
10. Attention by the Committee on groundwater issues is warranted. Dealing with a separate set of state regulations will be a problem. The question of mixing coupled with surface water passing through the mixed material into groundwater is a question that deserves attention. (Dr. Hinze)
11. Only soluble radionuclides will be transported. Dealing with groundwater contamination is a costly, emotional public concern. (Mr. Darois)

III. DISCUSSION OF INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION FOUNDATION DOCUMENTS (OPEN)

[Neil Coleman was the Designated Federal Official for this part of the meeting.]

Chairman Ryan discussed ACNW's review of five foundation documents that were recently released by the International Commission on Radiological Protection (ICRP). These documents are intended by ICRP to provide the technical bases for their 2004 recommendations on radiation protection. Dr. Don Cool of the NRC staff actively participated in the discussion of the ICRP reports.

Assessing Dose of the Representative Individual for the Purpose of Radiation Protection of the Public

This document is not very useful because of its lack of clarity and because of the multiple, confounding definitions of the "representative individual." For example, how can the "representative individual" be assumed to get the highest dose? Chairman Ryan commented that the definition of "representative individual" needs to be clarified and rewritten. Dr. Cool noted that this is an opportunity for the NRC and ACNW to suggest a favored definition. Chairman Ryan and Member Weiner responded that the Reasonably Maximally Exposed Individual (RMEI), as defined by EPA in 40 CFR Part 197, is a more workable definition than the term "representative individual."

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

Biological and Epidemiological Information on Health Risks Attributable to Ionizing Radiation: A Summary of Judgements for the Purposes of Radiological Protection of Humans

This document suggests small, incremental changes in health risks. The report confirms the linear non-threshold approach for evaluating relative risks to humans from radiological exposure. The biggest change that is proposed in the report is a reduction in the proton quality factor from 5 to 2, which would mainly affect medical applications. The quality factor for neutrons would also change slightly.

This foundation document discusses knowledge about genomic instability, bystander cell signaling and adaptive response in the genesis of radiation-induced health effects. It is insufficiently developed for radiological protection purposes. In many circumstances, these cellular processes will be incorporated in epidemiologic measures of risk. ICRP evidently recognizes these new issues of genomic instability, bystander effects, and adaptive response effects, but notes that they are not mature subjects at this time. Additional pertinent information will be available soon with the imminent release of the Biological Effects of Ionizing Radiation VII (BEIR VII) report: "Health Risks from Exposure to Low Levels of Ionizing Radiation," International Commission on Radiological Protection Committee 2 Basis for Dosimetric Quantities Used In Radiological Protection.

Biological Effects of Ionizing Radiation VII (BEIR VII) report: "Health Risks from Exposure to Low Levels of Ionizing Radiation," International Commission on Radiological Protection Committee 2 Basis for Dosimetric Quantities Used In Radiological Protection

ACNW values this document as it has several items that could enhance the current regulations and radiation protection guidance. ACNW suggests that the Commission consider three of these items for future action. ACNW categorizes these items as non-urgent changes and believes the Commission can accomplish these items in the normal course of updating regulations and guidance. The specific ICRP recommendations include somewhat revised radiation weighting factors for neutrons and protons (quality factors in 10 CFR Part 20), the tissue-weighting factors that reflect the ICRP's current thinking about cancer risk, and more recent methods and models for assessment of internal radiation exposures. Dr. Cool noted that the NRC staff has similar views, and once the scientific information has been finalized, then this topic should to be reconsidered with any regulatory updates.

This ICRP report also contains a useful commentary on the use of collective dose, as follows:

"In this connection it has to be realized that the risk factors (e.g., for carcinogenesis) at low doses are obtained from the extrapolation of epidemiological data observed in dose ranges of medium and high radiation doses. The extrapolation is based on the

MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005

assumption of a linear dose effect relation without a threshold (LNT concept). The Commission considers that in the low dose range the risk factors have an especially high degree of uncertainty. This is particularly the case for very low individual doses which are equivalent to small fractions of the radiation dose received from natural sources. In this sense it might be considered that individual doses of less than 10 μ Sv per year (1 mrem) are negligible and might not be included into the assessment of collective dose. The use of collective dose under such conditions and for such purposes is not valid and reasonable. It had never been the intention to use collective dose in that way."

The Optimization of Radiological Protection - Broadening the Process

In a letter dated November 3, 2004, the ACNW commented on the draft ICRP recommendations. We questioned whether the draft recommendations were really improvements. ALARA as practiced in the United States provides a framework for accomplishing much of what the ICRP says about optimization. ALARA is well understood and ALARA programs identify both dose reduction opportunities and other safety issues. The draft ICRP recommendations would complicate unnecessarily and confound existing ALARA principles and applications with new terminology. We do not see anything new in the optimization foundation document that should change the ACNW's view. The ACNW finds the current ICRP recommendations to be sufficient regarding "optimization."

This ICRP foundation document points out that the concept of collective dose is not helpful at very low exposure levels near background. Dr. Cool noted this is the first time ICRP has recommended moving away from a simple collective dose calculation and using other dose attributes explicitly to communicate other safety issues, prevent accidents, minimize waste, and involve stakeholders in the process. From ICRP's perspective, this new document certainly broadens their previous opinion on dose calculations. However, that approach is what NRC does and has done on a routine basis, and it is consistent with what is expected of our licensees and applicants and how the NRC staff has behaved when trying to involve stakeholders in the decision process.

The Concept and Use of Reference Animals and Plants for the Purposes of Environmental Protection

This ICRP foundation document was not addressed in the ACNW letter of November 3, 2004. The material was discussed briefly during the most recent ACNW briefing to the Commission and since then ACNW has reviewed the document in detail. The ACNW's view is that ICRP has not provided any evidence to counter the long-standing principle that protecting humans, protects the environment. There is a very large body of evidence from fundamental genetic cellular studies right on up to species studies that says if you protect humans you also protect the environment. This conclusion is not trivial to the United States or to other countries who adhered to that principle when designing their radiation protection strategies.

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

A fundamental question has not been answered by ICRP: Why is a new approach needed? There is no evidence cited by ICRP to demonstrate why reference animals and plants are needed for environmental protection. By their own admission, ICRP has not developed a scientific basis (from the 1991 ICRP report):

The Commission [ICRP] believes that the standards of environmental control needed to protect man to the degree currently thought desirable will ensure that other species are not put at risk. Occasionally, individual members of non-human species might be harmed but not to the extent of endangering whole species or creating imbalance between species. At the present time, the Commission [ICRP] concerns itself with mankind's environment only with regard to the transfer of radionuclides through the environment since this directly affects the radiological protection of man.

In this new foundation document, ICRP states that "[t]he Commission [ICRP] still believes that this judgment is likely to be correct in general terms because the steps taken to protect the public by reference to dose limits for them have resulted in strict controls and limitations on the quantities of radionuclides deliberately introduced into the environment."

ACNW recommends that the Commission not take any action at all until this is developed further or until evidence that contradicts the previous statements from ICRP is vetted and available through the scientific process. According to Dr. Cool, the NRC staff plans to reaffirm its previous comments. The Commission is on the record clearly expressing grave misgivings about moving to these environmental standards. The ACNW agreed that there is a substantial body of data that supports the current position that if you protect humans, then you are protecting the environment.

**IV. RISK INFORMING OF THE NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
ACTIVITIES (OPEN)**

[Latif Hamdan was the Designated Federal Official for this part of the meeting.]

The purpose of this briefing is to update the ACNW on ongoing activities to risk-inform regulatory reviews and decision making in NMSS.

Significant Points Raised

Dennis Damon from the Spent Fuel Project Office (SFPO) described ongoing activities to risk-inform regulatory reviews and decision making in the NMSS, including the status and nature of (1) a proposed approach to risk-inform regulatory activities; and (2) a structured generic process to risk-inform regulatory decision-making. He explained that the general methods for risk-informing the NMSS activities were developed by the Risk Task Group, and that the methods thus developed are now in the implementation phase with the SFPO leading this effort. He indicated that no resources have been budgeted for further development of ap-

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

proaches to risk-inform regulatory activities at the office level. All such activities are conducted within the respective NMSS divisions and have been program or project specific (information on specific activities is provided in SECY-05-0068).

Mr. Damon noted that the approach to risk inform NMSS activities is different from that implemented by the Office of Nuclear Reactor Regulation (NRR), and that there are differences between NMSS and NRR in the type of licensees and licensed facilities, types of health impacts, and the availability of risk information. He also indicated that the types of health impacts and availability of risk information vary widely across NMSS and therefore, the use of risk information varies.

Mr. Damon indicated that NMSS has developed a draft staff guidance that provides a common framework for risk-informing NMSS activities, which will soon be available for use on a trial basis by the NMSS staff. The guidance includes screening questions to guide the decision on the use of risk assessment and risk-informed decision-making methods. Mr. Damon outlined a stepwise risk-informed decision-making process, that (1) defines regulatory issues and preliminary alternative actions; (2) determines whether to risk inform (screening based on benefit, need, and feasibility); (3) evaluates risk information; (4) applies a risk-informed decision method (see NUREG/BR-0058 and NUREG/BR-0184 for decisions involving changes to regulatory requirements; and two types of criteria including "specific considerations" pertaining to risk, dose constraints and other factors, and "value impact analysis" to optimize tradeoffs), and (5) determines the necessary action.

Risk needs to be considered along with other factors in order to decide on the appropriate action. Factors to be considered include limits on doses or risk imposed on individuals as required by the regulations), compliance requirements, defense-in-depth requirements, safety margins, common defense and security, and screening based on negligible risk guidelines.

Mr. Damon indicated that the NMSS divisions have been developing risk-informed regulatory products for specific applications within the limits of the available resources, in order to make changes to the regulatory requirements, and in licensing reviews and inspection programs. He noted that there are differences in the information and applications of risk-informing the regulatory activities among the NMSS Divisions. He indicated that the Division of High-Level Waste Repository Safety (DHLWRS), Division of Waste Management and Environmental Protection (DWMEP), and Division of Industrial and Medical Nuclear Safety (IMNS) use comprehensive quantitative risk information for risk-informing reviews; the Division of Fuel Cycle Safety and Safeguards (FCSS) uses Standard Review Plan (SRP) guidance, and qualitative accident risk information from Integrated Safety Analyses or ISA's for all facilities; and the SFPO uses SRPs, Interim Staff Guidance, and qualitative and quantitative principles to risk inform its activities.

To summarize, Mr. Damon stated that: (1) NMSS has an overall approach for risk-informing activities that could be adapted and applied to risk-inform regulatory activities by different NMSS Divisions and programs; (2) some approaches use qualitative risk information; (3)

**MINUTES
160TH ACNW MEETING
JUNE 15- 17, 2005**

resources for guidance and methods development are very limited; and (4) from the perspective of NMSS, risk-informing means optimizing the use of limited resources.

Among other comments, the Committee members expressed the view that the fundamentals of risk informing the regulatory activities and reviews in different programs do not change despite program differences, that the draft staff guidance needs simplification, and that the staff guidance should emphasize the level of risk assessment and not emphasize whether risk assessment is needed.

The Committee will be briefed by the ACNW staff at the ACNW 161st meeting in July 2005 on approaches and practices to risk-inform the regulatory activities by NRR.

The Committee will deliberate and decide on the need to write a letter with recommendations to the Commission on the application of risk insights to NMSS activities, after the Committee receives a briefing from the ACNW staff on risk-informing NRR activities at the Committee's 161st meeting in July 2005.

**V. ACNW DRAFT WHITE PAPER ON LOW-LEVEL RADIOACTIVE WASTE (LLW)
MANAGEMENT ISSUES (OPEN)**

[Sharon Steele was the Designated Federal Official for this part of the meeting.]

An ACNW staff engineer provided the first draft of the white paper on LLW to ACNW. ACNW indicated the areas of the outline that were completed, (e.g., the scope, background, regulatory history and interfaces).

ACNW agreed to provide comments on the current draft. The revised draft will be discussed at the 161st ACNW meeting.

The meeting was adjourned at 12:00 P.M.

AM: Introductions and Updates—Office of International Science and Engineering; Presentation and Discussion of 2005 Committee of Visitors Report; Discussion of Developing Country Activities.

PM: Presentation by Assistant Director of Engineering, John Brighton; Presentation by Kathie L. Olsen, Office of Science and Technology Policy.

June 17, 2005.

AM: Committee discussion; Discussion with NSF Director Arden L. Bement, Jr.

Dated: May 26, 2005.

Susanne Bolton,

Committee Management Officer.

[FR Doc. 05-10889 Filed 5-31-05; 8:45 am]

BILLING CODE 7555-01-M

NUCLEAR REGULATORY COMMISSION

The Advisory Committee on Nuclear Waste; Notice of Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 160th meeting on June 15-17, 2005, Room T-2B3, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the *Federal Register* on Wednesday, December 8, 2004 (69 FR 71084).

The schedule for this meeting is as follows:

Wednesday, June 15, 2005

The Working Group Chairman will state the objectives for this Working Group Meeting and provide an overview of the planned technical sessions. Invited experts will also be introduced at this time. The purpose of this Working Group Meeting is to allow the Committee to comment on draft guidance that is being prepared to implement the License Termination Rule.

Thursday, June 16, 2005

10:15 a.m.–10:30 a.m.: *Opening Statement* (Open)—The ACNW Chairman will make opening remarks regarding the conduct of today's sessions.

10:30 a.m.–12 Noon: *Discussion on International Commission on Radiation Protection (ICRP) Foundation Documents* (Open)—The Committee will provide comments to the staff on the Committee's review of the latest ICRP Foundation Documents.

1:30 p.m.–3:30 p.m.: *Preparation of ACNW Reports/Letters* (Open)—The Committee will discuss proposed ACNW reports on matters considered during this meeting.

3:45 p.m.–5 p.m.: *Risk-Informing NMSS Activities* (Open)—The Committee will be briefed on NMSS staff approach to risk-inform decision-making for nuclear materials and waste applications.

5 p.m.–5:20 p.m.: *Draft White Paper on High-Level Waste Transportation Issues* (Open)—The Committee will discuss the elements of a proposed White Paper on the transportation of spent nuclear fuel and other high-level waste.

5:20 p.m.–5:40 p.m.: *Draft ACNW White Paper on Low-Level Waste* (Open)—The Committee will comment on the draft outline for the proposed White Paper on low-level radioactive waste management issues.

Friday, June 17, 2005

8:30 a.m.–8:40 a.m.: *Opening Remarks by the ACNW Chairman* (Open)—The ACNW Chairman will make opening remarks regarding the conduct of today's sessions.

8:40 a.m.–10 a.m.: *Report on Review of Center for Nuclear Waste Regulatory*.

Analyses' (CNWRA) Research Program (Open)—The Committee will hear a report from Committee members on the CNWRA Research Program based on their visit to, and discussions with, the Center in April 2005.

10 a.m.–11 a.m.: *Discussion of Possible Letters* (Open)—The Committee will discuss prepared draft letters and determine whether letters would be written on topics discussed during the meeting.

11 a.m.–12 Noon: *Miscellaneous* (Open)—The Committee will discuss matters related to the conduct of ACNW activities, and specific issues that were not completed during previous meetings, as time and availability of information permit. Discussions may include future Committee Meetings.

Procedures for the conduct of and participation in ACNW meetings were published in the *Federal Register* on October 18, 2004 (69 FR 61416). In accordance with these procedures, oral or written statements may be presented by members of the public. Electronic recordings will be permitted only during those portions of the meeting that are open to the public. Persons desiring to make oral statements should notify Ms. Sharon A. Steele, (Telephone 301-415-6805), between 7:30 a.m. and 4 p.m. ET, as far in advance as practicable so that appropriate arrangements can be made to schedule

the necessary time during the meeting for such statements. Use of still, motion picture, and television cameras during this meeting will be limited to selected portions of the meeting as determined by the ACNW Chairman. Information regarding the time to be set aside for taking pictures may be obtained by contacting the ACNW office 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 notify Ms. Steele as to their particular needs.

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted, therefore can be obtained by contacting Ms. Steele.

ACNW meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room (PDR) at pdr@nrc.gov, or by calling the PDR at 1-800-397-4209, or from the Publicly Available Records System component of NRC's document system (ADAMS) which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> or <http://www.nrc.gov/reading-rm/doc-collections/> (ACRS & ACNW Mtg schedules/agendas).

Video Teleconferencing service is available for observing open sessions of ACNW meetings. Those wishing to use this service for observing ACNW meetings should contact Mr. Theron Brown, ACNW Audiovisual Technician (301-415-8066), between 7:30 a.m. and 3:45 p.m. ET, at least 10 days before the meeting to ensure the availability of this service.

Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the video teleconferencing link. The availability of video teleconferencing services is not guaranteed.

Dated: May 25, 2005.

Andrew L. Bates,

Advisory Committee Management Officer.

[FR Doc. E5-2762 Filed 5-31-05; 8:45 am]

BILLING CODE 7550-01-P



APPENDIX B

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, DC 20555 - 0001

June 3, 2005

REVISED

AGENDA
160th ACNW MEETING
JUNE 15-17, 2005

~~WEDNESDAY, JUNE 15, 2005, 8:30 AM - 11:30 AM, TARDY, TWO MINUTE SILENCE
RESPECTFULLY~~

~~WORKING GROUP MEETING ON THE LICENSE TERMINATION RULE (DRAFT)~~

- 1) ^{8:32} 8:30 - 8:40 A.M. **Greeting and Introductions** (JHC/RKM)
The Chairman will state the objectives for this Working Group Meeting and provide an overview of the planned technical sessions. Invited experts will also be introduced at this time.
- Working Group Session Purpose**
The purpose of this Working Group Meeting is to allow the Committee to comment on draft guidance that is being prepared to implement the License Termination Rule.
- 2) 8:40 - 9:00 A.M. **General Description of Process and Overall Schedules** (Dan Gillen and Andrew Persinko)
- Stakeholders Meeting
- Current Status of Guidance Documents
- Current Schedule
- 3) ^{10:10} 9:00 - ~~10:00~~ A.M. **Guidance Documents:**
a. **Restricted use/institutional controls** (Robert Johnson/Kristina Banovac)
- Presentation of Guidance
- Roundtable Discussion
- ^{10:20} ~~10:00 - 10:15~~ A.M. *****BREAK*****
- 4) ^{10:20 11:20} 10:15 - 11:00 A.M. b. **Engineered Barriers** (David Esh/Robert Johnson)
- Presentation of Guidance
- Roundtable Discussion
- 5) ^{11:20 12:00} ~~11:00~~ - 11:30 A.M. c. **Onsite Disposal** (Thomas Youngblood)
- Presentation of Guidance
- Roundtable Discussion

- 12:00 12:42
6) ~~11:30~~ - 12:30 P.M. d. Realistic Dose Scenarios (Chris McKenney)
- Presentation of Guidance
- Roundtable Discussion
- 11:48 11:35
~~12:30~~ - 1:30 P.M. ***LUNCH***
11:35 - 11:40
7) ~~1:30~~ - 2:30 P.M. e. Intentional Mixing of Soils (Derek Widmayer)
2:30 3:15
- Presentation of Guidance
- Roundtable Discussion
- 1:40 1:55
8) ~~2:30~~ - 3:00 P.M. f. Approach for Identifying Sites with a High Potential for
Subsurface Contamination (James Shepherd)
- Scope of inspection guidance in FY06
- Roundtable Discussion
- 3:12 3:45
~~3:00~~ - 3:15 P.M. ***BREAK***
- 11:55 2:30
9) ~~3:45~~ - 3:45 P.M. g. Groundwater Monitoring - Operational, Decommissioning,
and Long-Term (Post Decommissioning) Monitoring
(James Shepherd)
- Presentation of Guidance
- Roundtable Discussion
- 4:20
10) 3:45 - 4:15 P.M. Status of NRC Plans for Lessons Learned (Rafael Rodriguez)
- Plans to capture current experience and good practice
- Roundtable Discussion
- 4:20 5:12
11) ~~4:15~~ - 5:30 P.M. Path Forward: General Discussion (All)
- Elements of an ACNW letter report
- Additional input from invited experts
- Finalize report at the July ACNW meeting (7/19-21/2005)
5:12 - 5:15 WRAP-UP
~~5:00 P.M.~~ ~~ADJOURN~~
5:15
- THURSDAY, JUNE 16, 2005. CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH,
ROCKVILLE, MARYLAND**
- 10:30 10:32
12) ~~10:15~~ - ~~10:30~~ A.M. Opening Remarks by the ACNW Chairman (Open)(MTR/JTL)
The Chairman will make opening remarks regarding the conduct
of today's sessions.
- 11:35
13) 10:30 - 12:00 Noon Discussion of International Commission on Radiation Protection
(ICRP) Foundation Documents (Open) (MTR/NMC)
The Committee will provide comments to the staff on the
Committee's review of the latest set of ICRP Foundation
Documents.

11:35

12:00 - 1:30 P.M.

*****LUNCH*****

14) 1:30 - 3:30 P.M.

3:15

Discussion of Possible ACNW Reports/Letters (Open) (All)

The Committee will discuss possible letters on:

- 14.1) Stakeholder Comments on the Recommended Standards and Regulations for Yucca Mountain (WJH/MPL)
- 14.2) Past ACNW Recommendations on Regulatory Time of Compliance (WJH/MPL)
- 14.3) April 2005 CNWRA Program Review (RFW/RPS)
- 14.4) DOE Plan for Transporting Spent Nuclear Fuel and High-Level Radioactive Waste to Yucca Mountain (RFW/LSH)
- 14.5) National Sealed Source Tracking System (AGC/RKM)

3:15 3:45

1:50 2:00

1:50 2:40

3:15 3:30

3:30 - 3:45 P.M.

*****BREAK*****

15) 3:45 - 5:00 P.M.

3:35 4:50

Risk-Informing NMSS Activities (Open) (MTR/LSH)

The Committee will be briefed on NMSS staff approach to risk-inform decision-making for nuclear materials and waste applications.

16) 5:00 - 5:20 P.M.

4:20 5:10

Draft White Paper on High-Level Waste Transportation Issues (Open) (RFW/RKM)

The Committee will discuss the elements of a proposed White Paper on the transportation of spent nuclear fuel and other high-level waste.

17) 5:20 - 5:40 P.M.

Draft ACNW White Paper on Low-Level Waste (Open) (MTR/SAS)

The Committee will comment on the draft outline for the proposed White Paper on low-level radioactive waste management issues.

FRIDAY, APRIL 22, 2005 8:00 AM - 10:00 AM

18) 8:30 - 8:40 A.M.

8:32

Opening Remarks by the ACNW Chairman (Open)(MTR/JTL)

The Chairman will make opening remarks regarding the conduct of today's sessions.

19) 8:40 - 10:00 A.M.

Cancelled

Report on Review of Center for Nuclear Waste Regulatory Analyses (CNWRA) Research Program (Open) (RFW/RPS)

The Committee will hear a report from the Committee members on the CNWRA Research Program based on their visit to, and discussions with, the Center in April 2005.

- 8:32 12:00 PM
- 20) ~~10:00~~ - 11:00 A.M. Discussion of Possible Letters (Open) (All)
 The Committee will discuss prepared draft letters and determine whether letters would be written on topics discussed during the meeting.
- 20.1) Stakeholder Comments on the Recommended Standards and Regulations for Yucca Mountain (WJH/MPL)
 - 20.2) Past ACNW Recommendations on Regulatory Time of Compliance (WJH/MPL)
 - 20.3) April 2005 CNWRA Program Review (RFW/RPS)
 - 20.4) DOE Plan for Transporting Spent Nuclear Fuel and High-Level Radioactive Waste to Yucca Mountain (RFW/LSH)
 - 20.5) National Sealed Source Tracking System (AGC/RKM)
 - 20.6) Risk Informing NMSS Activities (JHC/LSH)
 - 20.7) Decommissioning Working Group Meeting (JHC/RKM)
 - 20.8) ICRP Foundation Documents (MTR/NMC)
- 21) 11:00 - 12:00 P.M. Miscellaneous (Open)
 The Committee will discuss matters related to the conduct of ACNW activities and specific issues that were not completed during previous meetings, as time and availability of information permit. Discussions may include future Committee Meetings.

~~12:00 P.M. Adjourn~~

NOTES:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- **Thirty (35) hard copies and one (1) electronic copy of the presentation materials should be provided to the ACNW.**
- ACNW meeting schedules are subject to change. Presentations may be canceled or rescheduled to another day. If such a change would result in significant inconvenience or hardship, be sure to verify the schedule with Ms. Sharon Steele at 301-415-6805 between 8:00 a.m. and 4:00 p.m. prior to the meeting.

APPENDIX C: MEETING ATTENDEES

160TH ACNW MEETING

ACNW MEMBERS

Michael Ryan, Chairman
Allen Croff, Vice Chairman
James Clarke
William Hinze
Ruth Weiner

INVITED EXPERTS

E. Abelquist, Oak Ridge National Lab.
V. Autry, South Carolina Dept. of Radiological
Protection (independent expert)
E. Darois, RSCS, Inc.
T. Ikenberry, Dade Moeller & Associates, Inc.
T. Nauman, Shaw Group, Inc.

ACNW STAFF

John Larkins
Neil Coleman
John Flack
Michele Kelton
Latif Hamdan
Michael Lee
Richard Major
Richard Savio
Michael Scott
Sharon Steele

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION

JUNE 15, 2005

S. Wilson	NRR
T. Mo	RES
E. O'Donnell	RES
A. Turner	NMSS
K. Schneider	STP
S. Bush-Goddard	RES
T. Nicholson	RES
P. Reed	RES
P. Loeser	NRR
J. Vora	RES
M. Chiramal	NRR
C. Antonescu	RES
A. Schwartzman	RES
D. Widmayer	NMSS
J. Peckenpaugh	NMSS
R. Rodriguez	NMSS
S. Morris	NSIR
E. Lee	NSIR
R. Johnson	NMSS
K. Banovac	NMSS
D. Schmidt	NMSS
C. Craig	NMSS
D. Gillen	NMSS
D. Orlando	NMSS
T. Smith	NMSS

**APPENDIX C
160TH ACNW MEETING
JUNE 15-17, 2005**

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION (CONT'D)

JUNE 15, 2005 (Cont'd)

T. Boyce	NRR
J. Philip	RES
N. Haggerty	NMSS
D. Esh	NMSS
D. Brown	NMSS
B. Eid	NMSS
J. Shepherd	NMSS
B. Smith	OGC
K. Gruss	NMSS
A. Snyder	NMSS
T. Govan	RES

JUNE 16, 2005

R. Jasinski	NRR
F. Holahan	RES
A. Fetter	NMSS
D. Cool	NMSS
C. Brown	NMSS
J. Chuang	NMSS
J. Rubenstone	NMSS
C. Barr	NMSS
D. Damon	NMSS
L. Campbell	NMSS
B. Tripathi	NMSS
A. Rubin	RES
P. Reed	RES
D. Bianco	OIG
J. Dykes	OIG

**APPENDIX C
160TH ACNW MEETING
JUNE 15-17, 2005**

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

JUNE 15 2005

E. von Tiesenhausen
P. Saverot
C. Gerwitz
P. Bembia
A. Clarke
J. Lieberman
G. Babineau
E. Hocking
A. Carson
A. Newman

CCCP
GAI Corp.
NYSERDA
NYSERDA
ANC Associates, Inc.
Self
Yankee Atomic Electric Co.
Argonne National Lab.
RSCS
Embassy of Australia

JUNE 16, 2005

E. von Tiesenhausen
N. Henderson
M. Baughmon
D. Fehringer
L. Fairobent
R. MacDougall
B. Grove
D. Spangler
R. Anderson

CCCP
Bechtel-SAIC Co. (BSC)
ISC
Nuclear Waste Technical Review Board
AAPM
BSC
Las Vegas Sun
Exchange Monitor Pub.
Nuclear Energy Institute

APPENDIX D: FUTURE AGENDA

The Committee approved the following topics for discussion during its 161st meeting, scheduled for July 19–21, 2005:

- Development of Risk-Informed Regulation Within the NRC and Its Application to the Nonreactor Arena
- Occupational Safety and Health Administration's (OSHA) Request for Additional Information on Ionizing Radiation
- ACNW Low-Level Radioactive Waste Management Paper: Draft No. 2
- Staff Briefing on International Atomic Energy Agency (IAEA) Requirements Document DS-154: Design and Operation of Facilities for Geological Disposal of Radioactive Waste
- Review of Generic Waste-Related Research in the Office of Nuclear Regulatory Research (RES)
- RES White Paper on Collective Dose
- Preparation of ACNW Reports

**APPENDIX E
LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE**

[Note: Some documents listed below may have been provided or prepared for Committee use only. These documents must be reviewed prior to release to the public.]

MEETING HANDOUTS

<u>AGENDA ITEM NO.</u>	<u>DOCUMENTS</u>
1-11	<u>Working Group Meeting on the License Termination Rule (LTR)</u> <ol style="list-style-type: none">1. Restricted Use and Institution Controls, presented by Robert L. Johnson & Kristina Banovac, NMSS [Viewgraphs]2. Integrated Decommissioning Improvement Plan: Preliminary Summaries of Key Decommissioning Guidance Issues - Background, provided by
4	<u>Low-Level Waste Annual Update</u> <ol style="list-style-type: none">2. Low-Level Radioactive Waste Annual Update for the Advisory Committee on Nuclear Waste, presented by James Kennedy, DWMEP, NMSS [Viewgraphs]
15	<u>Risk-Informing Office of Nuclear Materials Safety and Safeguards Activities</u> <ol style="list-style-type: none">3. Risk-Informed Regulations for NMSS Activities, presented by Dennis Damon, Special Fuels Project Office [Viewgraphs]

MEETING NOTEBOOK CONTENTS

TAB NUMBER

DOCUMENTS

Revised Agenda, 160th ACNW Meeting, June 15–17, 2005, dated June 3, 2005

Introductory Statement by ACNW Chairman, Wednesday, June 15, 2005, undated

Introductory Statement by ACNW Chairman, Thursday, June 16, 2005, undated

Introductory Statement by ACNW Chairman, Friday, June 17, 2005, undated

Color Code–ACNW Meeting, dated June 2, 2005

1-11

Working Group on the License Termination Rule (LTR)

1. Table of Contents

A. Attachments

- a. Schedule, June 3, 2005
- b. Status Report, June 3, 2005
- c. Integrated Decommissioning Improvement Plan: Preliminary Summaries of Key Decommissioning Guidance Issues (Draft for Use at June 15, 2005 ACNW Working Group)
- d. Subpart E–Radiological Criteria for License Termination (a.k.a. the License Termination Rule, LTR, July 21, 1987)
- e. NRC Regulatory Issue Summary 2004-08 Results of the License Termination Rule Analysis, May 28, 2004

Note: (What follows below is general background. It provides additional detail and some of the reports are referenced in the guidance summaries.)

- f. SECY-03-0069, Results of the License Termination Rule Analysis. May 2, 2003
- g. Staff Requirements - SECY-03-0069 -Results of the License Termination Rule Analysis, November 17, 2003

Note: Invited Experts - A staff requirements memo gives the Commission's direction to the NRC staff on the options outlined in Attachment 6

- h. SECY-04-0035, Results of the License Termination Rule Analysis of the Use of Intentional Mixing of Contaminated Soil. March 1, 2004
- i. Staff Requirements - SECY-04-0035 - Results of the License Termination Rule Analysis of the Use of Intentional Mixing of Contaminated Soil, May 11, 2004

MEETING NOTEBOOK CONTENTS (CONT'D)

**TAB
NUMBER**

DOCUMENTS

1-11 (cont'd) Working Group on the License Termination Rule (LTR) (Cont'd)

1. Table of Contents (Cont'd)
 - A. Attachments (Cont'd)
 - j ACNW Letter Report: Review the LTR Analysis International Mixing of Contaminated Soil, July 30, 2004

References Specific to Restricted Use/Institutional Controls:

- k. Nuclear Regulatory Commission Staff Guidance For a Long Term Control Possession Only license at the Shieldalloy Metallurgical Corporation Site in Newfield, New Jersey, May 15, 2004
- l. U.S. Nuclear Regulatory Commission Experience Implementing A Risk-Informed Graded Approach for Institutional Controls to Restricted Sites, WM '05 Conference, February 27-March 3, 2005, Tucson, AZ, - Robert L. Johnson, U.S. NRC
- m. Brief Biography of the Invited Experts:
 - Eric Abelquist
 - Virgil Autry
 - Eric Darois
 - Tracy Ikenberry
 - Tom Nauman

13 Discussion of International Commission on Radiological Protection (ICRP) Foundation Documents

2. Status Report w/Attachments

15 Risk-Informing NMSS Activities

3. Schedule
4. Status Report

19 Report on Review of Center for Nuclear Waste Regulatory Analyses (CNWRA) Research Program

5. Status Report
6. Agenda for April 14-15, ACNW Member Visit to CNWRA