



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

August 14, 2003

MEMORANDUM TO: ACNW Members
ACNW Staff

FROM:

Michele S. Kelton
Michele S. Kelton
Technical Secretary, ACNW

SUBJECT:

CERTIFIED MINUTES OF THE 143RD MEETING OF THE ADVISORY
COMMITTEE ON NUCLEAR WASTE (ACNW) JUNE 24–25, 2003

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

Attachment:
Certified Minutes
Meeting, June 24–25, 2003

cc: J. Larkins, ACRS/ACNW
S. Bahadur, ACRS/ACNW
H. Larson, ACNW/ACNW
A. Bates, SECY (O-16C1)
P. Justus, NMSS (T-7F3)
I. Schoenfeld, EDO (O-16E15)

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CERTIFIED

8/8/03

By GEORGE M. HORNBERGER

Issued: 8/8 /03

CERTIFIED MINUTES OF THE 143RD MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE JUNE 24–25, 2003

The U.S. Nuclear Regulatory Commission (NRC), Advisory Committee on Nuclear Waste (ACNW or the Committee), held its 143rd meeting on June 24–25, 2003, at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. The ACNW published a notice of this meeting in the *Federal Register* (68 FR 35457) on June 13, 2003 (Appendix A). This meeting served as a forum for attendees to discuss and take appropriate action on the items listed in the agenda (Appendix B). The entire meeting was open to the public.

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 Co., Inc., 1323 Rhode Island Avenue, NW., Washington, DC 20005. Transcripts may also be downloaded from, or reviewed on, the Internet at <http://www.nrc.gov/reading-rm/doc-collections/acnw/tr/> at no cost.

ACNW Members who attended this meeting were Dr. George M. Hornberger, Chairman, Dr. B. John Garrick, Mr. Milton Levenson, and Dr. Michael T. Ryan. For a list of other attendees, see Appendix C.

I. CHAIRMAN'S REPORT (OPEN)

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

Dr. George M. Hornberger, ACNW Chairman, convened the meeting at 10:00 a.m. and briefly reviewed the agenda. He also stated that the meeting was being conducted in conformance with the Federal Advisory Committee Act. In addition, Dr. Hornberger asked members of the public who were present and had something to contribute to the meeting to inform the ACNW staff so that time could be allocated for them to speak. He concluded his report by noting the following items of interest:

- Ms. Tanya Winfrey, ACRS/ACNW Administrative Assistant, received the NRC Meritorious Service Award from the Commissioners on June 12, 2003, during an agency-wide ceremony.
- Ms. Tina Ghosh, Ph.D. candidate at the Massachusetts Institute of Technology, joined the technical staff on June 9, 2003. Ms. Ghosh is working with the ACNW staff on probability

risk assessments, etc., and is keenly interested in risk and uncertainty issues at Yucca Mountain, Nevada.

- In a June 3, 2003, press release, the World Edition of BBC News discussed Neil Coleman's paper, "Aqueous Flows Carved the Outflow Channels on Mars" (*Journal of Geophysical Research*, Vol. 108, No. 0, accepted January 3, 2003).

II. DOE STRATEGY FOR RESOLVING KEY TECHNICAL ISSUES (OPEN)

[Mr. Michael Lee was the Designated Federal Official for this portion of the meeting.]

The NRC and U.S. Department of Energy (DOE) staffs have been using the pre-licensing consultation process to identify information that should be included in any license application to construct a geologic repository at Yucca Mountain, Nevada. As part of that process, the NRC staff identified additional information needs (i.e., gaps in process knowledge, data, or analytical computer codes) related to the nine key technical issues (KTIs). The respective staffs subsequently reached agreement on 293 agreement items that should be included in a license application. If DOE provides the additional information identified, completion of each KTI agreement is expected to enhance the likelihood that the license application will be complete and of high quality.

The 293 KTI agreements themselves do not have equal standing. Some are more important than others, and some may apply to more than one KTI. Moreover, for the purposes of "completion," some KTI agreements are viewed to be more resource-intensive (i.e., in dollars, staff, time) than others. About 95 percent of the KTI agreements relate to post-closure safety and the remaining agreements relate to pre-closure safety. DOE has committed to address all 293 KTI agreements before the submission of its license application. A recent compilation by the staff indicates that 99 KTI agreements have been completed to date,¹ and DOE responses for an additional 56 KTI agreements are undergoing NRC review. That leaves 138 KTI agreements which need to be addressed by DOE in the 18 months remaining to the scheduled December 2004 target date for the license application submission.

DOE is behind in its original time table to provide information for the remaining KTI agreements.² The schedule delay has raised concerns that that information needed to complete many KTI agreements will be provided shortly before or at the projected 2004 date for submitting a license application, leaving the staff insufficient time to review and comment on the requested technical information.

Consequently, DOE is now looking at ways to introduce efficiencies into the existing resolution process to ensure that all KTI agreements will be addressed by the projected 2004 date for submitting a license application. Rather than address each KTI agreement individually, DOE is

¹"Closed" at the staff level.

²As a matter of background, a DOE representative (April Gil) noted that the Department's delay in responding to KTI agreements thus far can be attributed to the 2002–2003 budget uncertainty and to the fact that the Yucca Mountain Review Plan (YMRP, NUREG-1804) is only a draft guidance document.

proposing to organize groups of similar KTI agreements into "bundles" and address the agreements collectively. At its 143rd meeting, DOE and DOE contractor staff provided the ACNW with an information briefing outlining this approach. To introduce the bundling concept, presentations were made on the following subjects:

1. DOE's approach and commitment to resolving all KTI agreement items (discussed by A. Gil)
2. The integrated technical basis used to organize (bundle) the KTI agreements into the 14 *issue response groups* of interest (discussed by Robert Andrews/Bechtel SAIC)
3. Use of risk information (e.g., sensitivity and uncertainty analyses) to address KTI agreements (discussed by R. Andrews)
4. KTI issue grouping strategy and time table (discussed by Tim Gunter/DOE)

In theory, DOE has developed a matrix of the various KTI agreements and attempted to organize them according to common (fundamental) technical issues such as requiring similar physicochemical or engineering process knowledge, having shared data requirements, or relying on common computer codes to derive solutions. If the cognizant DOE subject matter experts believe that the outstanding KTI agreements suffer from the same fundamental technical issue, then there is justification for bundling (integrating) the agreements. By addressing the fundamental technical issue of concern, DOE expects to respond to multiple KTI agreements while at the same time preparing the basic information needed for its license application. Under this proposal, the majority of the KTI agreement items (mostly post-closure issues) would fall into 14 bundles of varying size called "issue response groups"; 13 of the remaining KTI agreements (essentially pre-closure issues) would not be bundled and would be addressed individually.³ In fall 2003, DOE expects to provide the NRC staff with its technical basis for how it bundled individual agreements into the respective issue response groups. As additional background, DOE noted that it had relied on the integrated subissue structure of the draft YMRP to aid in decisions on issue response group assignments.

During the course of the presentations, individual ACNW members had the following questions and comments:

- A significant amount of analytical work would be necessary to achieve true technical integration of the respective KTI agreements (Dr. Garrick). From the risk (dose) perspective, understanding the impact of a particular KTI agreement would be a useful outcome of DOE's mapping efforts. Also from a risk perspective, not all KTI agreements would, necessarily, be of equal significance.
- There is the potential for the NRC staff to disagree with DOE on how DOE bundled the agreements and thus there may be a need for the process to cycle a few times before consensus is achieved between the respective staffs (Member Hornberger).

³It is estimated that there are about eight other KTI agreements in varying stages of review currently by the NRC staff.

As a matter of record, a staff representative (Tim McCartin/Division of Waste Management) also noted that the NRC had not reviewed or commented on the proposed bundling approach itself or organization of the KTI agreements into the respective issue response groups.⁴ From DOE's perspective (Andrews and Gunter), it was observed that DOE expects to iterate the bundling process to reconcile any potential staff differences and understand the potential significance of a particular agreement on repository performance. Moreover, in response to earlier NRC staff criticisms, DOE noted that it intends to demonstrate that it has considered the combined effects of uncertainty as part of the performance assessment supporting its license application.

At the end of this session, members of the public were invited to ask questions or make comments. A representative of the Electric Power Research Institute (EPRI, Frank Ron) observed that DOE had not addressed the issue of timing in its presentation. In particular, the EPRI representative questioned the value and the need of addressing low- and medium-ranked agreements (in terms of risk) prior to the submittal of the DOE license application given timing and resource considerations. In response, DOE (Gil) stated that DOE had every intention of addressing each of the KTI agreements prior to the submittal of its license application to the NRC.

III. USE OF RISK INFORMATION AS A BASIS FOR DOE/NRC AGREEMENT CLOSURE (OPEN)

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

Dr. David Esh of the Office of Nuclear Material Safety and Safeguards (NMSS) began this session by explaining that the NRC encourages the use of risk assessments and sensitivity analyses to help identify the data, models, and barriers that are most important to repository performance and to focus available resources on those items. DOE had proposed the use of risk information (as opposed to additional technical information) to close 30 agreements as recently as a month ago. The current goal is to close eight agreements using risk information as the basis. The NRC staff expects any such use of risk information to complement quantitative analyses of the total system performance assessment (TSPA) models.

The staff said that in using risk information to close KTI agreements, DOE has selected a pessimistic state for the uncertainty in a parameter or model subsystem that is being addressed and then compared the calculated doses with NRC's regulatory standard. If the outcome for the pessimistic state is significantly less than the radiological standard, the issue under examination is deemed insignificant to meeting the radiological standard. The implied conclusion is that the additional information requested in the agreement is not necessary.

The NRC staff expects additional information as the basis for KTI resolution beyond a pessimistic dose calculation. The technical bases for the quantitative analyses should be provided. The detail in the technical bases for the analyses should be commensurate with the uncertainty, risk significance, and pessimism introduced into the analyses. The treatment of model and

⁴DOE formally transmitted its proposal to the NRC staff on June 23, 2003 (letter from J. Ziegler/DOE to J. Schlueter/NRC), on the eve of its presentation to the ACNW.

parameter uncertainty is the focus of the risk-informed agreement resolution process. Adequate documentation of the analyses is expected. The staff expects enough information to understand the analyses without contacting the author. The staff would expect the consideration and representation of uncertainties. If not directly included in the analysis, related potential effects should be discussed in at least a qualitative manner. The combined effect of uncertainties should be quantitatively assessed. The staff expects a physical understanding and explanation of the quantitative results, especially when the results are counterintuitive. Finally, a confirmatory analysis with a qualified TSPA model should accompany any proposed resolution.

Dr. Esh shared insights from NRC's performance assessment (PA). Stochastic performance assessment is used to evaluate the impact of uncertainty on performance for the repository system. Ten percent of the computer realizations represents 95% of the peak mean dose. Usually, propagation of uncertainty (combined effects) drives the risk in a PA model.

In conclusion, the staff explained that extremely pessimistic analyses for individual uncertainties are not required by the NRC. NRC believes that the margin between the analysis results and the performance objective can be considered when risk informing. However, the potential combined effect (propagation of uncertainty) can be important. Risk-informed issue resolution can be done in lieu of an original agreement when uncertainties are considered appropriately.

Robert Andrews discussed the use of risk information to address KTI agreements from DOE'S perspective. The majority of KTI agreements are being addressed with additional scientific or engineering information consistent with the original agreement. DOE has used risk information as an alternative means of addressing the agreement; to date, eight agreements are using this approach. The goal of this effort is to focus resources on those KTI agreements for which unresolved technical issues could impact the repository's ability to meet postclosure compliance standards.

The DOE approach to using risk information as a basis for agreement resolution is to use it when the information requested is shown to have limited significance to mean annual dose; or the information requested is not needed to support the technical basis for the treatment of uncertainty regarding relevant processes included in the TSPA; or the information requested in the agreement is not needed to support the description of barrier capability that will be included in the license application. The risk-informed basis includes TSPA sensitivity analysis techniques such as extreme value one-off analyses, neutralizations, and combined effect analyses.

Dr. Andrews described DOE's proposed path forward. DOE will continue to provide documentation to NRC for agreements identified as candidates for risk-informed resolution. The information will have an explanation of the technical basis for the conclusion that (1) overall performance is not sensitive to the information requested or (2) the requested information is not needed for demonstrations of barrier capability. The full probabilistic TSPA for the license application will provide information on the combined effects of uncertainty.

IV. NRC STAFF REPORT ON THE RISK SIGNIFICANCE RANKING OF THE 293 KTI AGREEMENTS (OPEN)

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

The NMSS (Division of Waste Management) staff updated the Committee on how the 293 key technical issue agreements were ranked. The three rankings chosen were high, medium, and low significance to risk.

In response to a Commission staff requirements memorandum written after the staff's March 3, 2003, briefing of the Commission on the waste arena, the Executive Director for Operations sent the Commission a memorandum, dated June 5, 2003, that described the staff's approach to risk-ranking the agreements, provided background information about the technical difficulty of many of the agreements, and explained how the information is being used to risk inform the pre-licensing process for Yucca Mountain.

The NMSS staff discussed three topics: (1) risk insights baseline, (2) risk ranking of pre-licensing agreements, and (3) continuation of the risk insights initiative. The baseline was developed based on experience with total system performance assessments, subsystem analyses and auxiliary calculations, and review of DOE's performance assessments.

Risk ranking of agreements considered various factors, such as potential for effects on large numbers of waste packages, release rates from waste forms, transport of radionuclides through the geosphere, effects of multiple barriers, and model uncertainties. Agreements of high risk significance generally involve significant uncertainty and could potentially have significant effects on risk estimates. Medium-risk agreements could have some effects on risk estimates, and low-risk agreements are thought to have little effect on such estimates.

The staff presenters then described the risk rankings for the overall integrated subissues (ISI). For example, the ISI "Quantity and Chemistry of Water Contacting Waste Packages and Waste Form" was ranked as having high risk significance. Issues that relate to this ranking include the chemistry of the near-field water contacting the drip shield and waste package and the temperature at which specific brine chemistries develop on waste packages. Other ISIs found to have high risk significance included the following: (1) Degradation of Engineered Barriers, (2) Mechanical Disruption of Engineered Barriers, (3) Radionuclide Release Rates and Solubility Limits, (4) Radionuclide Transport in the Saturated Zone, (5) Volcanic Disruption of Waste Packages, (6) Airborne Transport of Radionuclides, (7) Performance Assessment Methodology, and (8) Preclosure Safety Analysis.

As of June 25, 2003, 41 of the 293 agreements were found to have high risk significance. Of these, 4 are complete, 6 are under staff review, and 37 have yet to be addressed in DOE submittals to the NRC. Most of the high-risk significant agreements are associated with features, events, and processes that could affect large numbers of waste packages. They could also significantly affect releases from waste packages or affect radionuclide transport. Of the remaining agreements, 92 were found to be of medium risk and 160 were considered to be low-risk significant agreements.

In response to Committee questions, DWM staff noted that the risk insights initiative is not complete, and that it represents a process that is continuing to evolve. It is an important part of the overall risk-informed regulatory program. The baseline is being used to prioritize pre-licensing activities, to focus staff resources, and to support risk-informed project management and decisionmaking. DWM staff expect to complete a final report on the risk-insights initiative in the October 2003 timeframe.

V. DRY CASK SPENT FUEL STORAGE CHARACTERIZATION PROJECT (OPEN)

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

The purpose of this project was to test the behavior of spent fuel that had been stored in a dry cask for 15 years. The project also examined high-burnup fuel recently removed from a pressurized water reactor (PWR) and fuel recently removed from a boiling water reactor (BWR). The tests performed examined the mechanical properties the fuel rods. The NRC staff is doing these tests in preparation for license extension requests for dry cask spent fuel storage facilities. Dry cask storage facilities were originally licensed for 20 years, but many facilities are reaching the time limit of their license. The staff is considering whether or not to extend the dry cask storage licenses 20 or more years.

Before issuing license extensions, the staff must assure that spent fuel in dry casks is being protected from degradation that leads to gross ruptures. This is required by the Commission's regulations. The staff (and the agency's contractor, Argonne National Laboratory) have used a combination of visual nondestructive testing and destructive testing to assure the long-term integrity of the spent fuel.

The testing was, or is, being performed on three types of fuel: (1) spent fuel from Surry, a PWR, stored in a dry cask for 15 years and having a burnup rate of 36 GWd/MTU; relatively fresh spent fuel from H.B. Robinson, a PWR, with a high-burnup rate of 67 GWD/MTU; and finally, relatively fresh spent fuel from Limerick, a BWR, with a moderate-burnup rate of 56 GWD/MTU.

Many different examinations were performed to characterize the fuel cladding, including testing for fission gas release, looking at the physical state of the fuel, examining the fuel-cladding interface, examining the cladding corrosion, and inspecting for the migration of hydride in the cladding (which can lead to embrittlement).

Harold Scott of the Office of Nuclear Regulatory Research (RES) presented various exhibits of the spent fuel and cladding and general conclusions. For example, the effect of storage on the Surry fuel appears benign. There was no fission gas release. No obvious changes to the fuel micro structure were observed, and there was little or no in-storage creep. The cladding hydrogen content appeared normal. There were similar results from the examination of the higher burnup fuels from H.B. Robinson and Limerick. There was additional hydride uptake and fuel cracking, but the overall state of the fuel remained acceptable.

The fuels are also undergoing thermal creep testing. Pieces of the fuel cladding are internally pressurized and heated in a furnace. The results of the tests on the Surry cladding show

significant residual creep ductility. Early data on the H.B. Robinson cladding suggest that the creep rate is comparable to that of Surry, i.e., there are no detrimental high-burnup effects.

The ACNW Members suggested that test results be extrapolated to the long-term behavior of the fuel (thousands of years) because of the profound effect creep could have on the source term for the proposed high-level waste (HLW) repository. Dr. Scott was asked if there was any evidence of fuel unzipping in storage. There has not been any; the fuel cladding will only unzip with an initial cladding break and an oxidizing environment and a temperature greater than 250 °C. In addition to extended dry storage times, results of these experiments are being fed back to reactor operators. Results from these experiments have demonstrated that current models overpredict creep rates. Based on these tests, there is no reason why dry cask storage cannot be extended another 20 years.

VI. 2003–2004 ACNW RESEARCH REPORT AND UPDATE ON WASTE MANAGEMENT-RELATED RESEARCH (OPEN)

[Dr. Richard Savio was the Designated Federal Official for this portion of the meeting.]

At the 143rd meeting, the ACNW performed its annual review of NRC-sponsored, waste-related research⁵ for fiscal year (FY) 2003 and FY 2004. The presentation was done by the Branch Chief (Cheryl Trottier) of the Office of Nuclear Regulatory Research's (RES') Radiation Protection, Environmental Risk and Waste Management Branch, and addressed the following areas:

- current and future proposed budget
- peer review recommendations for the current RTE Program Plan
- scope of current RTE research program
- areas for future RTE research

The following noteworthy points were made:

RES Budget: The FY 2003 RES budget in the waste arena is \$3.3 million and 13.2 FTE. The budget for FY 2004 is expected to be slightly larger in terms of dollars, with some new RTE project starts.

RES Program Plan: Based on an earlier Committee recommendation, RES contracted with the Institute of Regulatory Science in 2002 to undertake a peer review of the RES Program Plan. In 2003, RES received the Institute's peer review recommendations. (A copy of these recommendations was also provided to the ACNW.) The principal recommendations to the RES staff were to:

- expand the list of references in the RES Program Plan;
- solicit (in-house) stakeholder feedback on RES priorities; and
- incorporate so-called anticipatory research in high-level radioactive waste management into the Program Plan.

⁵Hereafter referred to as radiological transport in the environment or RTE.

It was noted that RES staff are currently revising the RTE Program Plan to address these recommendations.

Current Program Overview: The scope of the current research program is defined largely by user needs (requests) from NMSS. In response to these requests, the RES representative noted that RES was supporting rulemakings related to clearance and entombment. Other (lesser) NMSS user needs requested activities related to dose modeling, ground water transport codes, and risk analysis approaches were also discussed.

Areas for Future Work: Two items were discussed: approaches to updating the RTE Program Plan itself and additions to the upcoming RTE work scope. The RES representative noted that in the future, the office intended to annually meet with internal as well as external stakeholders to confirm/reaffirm the existing scope and priorities for RTE-based research, use RTE research priorities to support budget requests for out-years, and possibly have the RTE Program Plan peer-reviewed biannually.

As regards the future scope of NRC-sponsored research, the RES representative noted that the office intended to do the following:

- support the Interagency Steering Committee on Multi-Media Modeling
- identify future HLW anticipatory research needs
- focus on specific decommissioning issues

During the presentations, one of the Members (Ryan) raised a question about potential research related to human dose response. In particular, there is the longstanding question regarding the validity of the linear nonthreshold hypothesis or LNTH. In reply, the RES representative noted that NRC had budgeted no resources to look at this issue. By way of comparison, it was noted that DOE had budgeted \$200 million to examine LNTH.⁶ The RES representative noted that RES hoped to stimulate some interest in this area by asking the National Council on Radiation Protection to examine LNTH in the context of collective dose. In the interim, RES expects to propose a modest research plan in the area of health effects by the end of calendar year 2003. The ACNW will be briefed on the scope of the proposed plan when it becomes available.

During this presentation, it was noted that RES is attempting to scope out new, so-called anticipatory research related to the geologic disposal of spent nuclear fuel and high-level radioactive waste as well as new research in the area of radiation health effects.

The formal presentation was followed by questions and comments from the individual ACNW Members. Dr. Garrick observed that the Committee needs to better understand the full scope

⁶ It was noted that DOE had decided to let an LNTH validation contract with the former Soviet Union (to reconstruct 1940s-1950s era human doses to nuclear defense workers) expire due to the lack of contractor performance. Consequently, DOE was looking at alternative ways to validate LNTH theories. The Members expressed an interest in learning more about future DOE plans to validate LNTH theories.

of all NRC-sponsored research⁷ for two reasons. First, there may be some potential applications of non-waste-related research to the high-level waste program such as those related to the long-term storage of spent nuclear fuel (which the Committee had just heard about). Second, there is the broader waste management issue as it relates to the overall nuclear fuel cycle. For example, it is important for decisionmakers to understand the implications for new power reactor designs on waste minimization (an issue also raised by Mr. Levenson). During questioning, the RES representative noted the following:

- The Commission is expected to provide the staff with guidance on how to use the collective dose concept in regulatory decisionmaking (response to question from Dr. Ryan).
- RES may have ideas for areas of potential HLW anticipatory research following the July 2003 meeting of the ACNW Working Group on Yucca Mountain Performance Confirmation Programs (response to question from Dr. Hornberger).

VII. PLANS FOR PERFORMANCE CONFIRMATION WORKING GROUP COMMITTEE ACTION (OPEN)

The Committee discussed the final agenda and plans for the Performance Confirmation Working Group scheduled for the 144th ACNW meeting, July 29–30, 2003.

VIII. ELECTION OF OFFICERS (OPEN)

The Committee elected Dr. B. John Garrick as Chairman and Dr. Michael T. Ryan as Vice-Chairman. Their terms of office will run from July 1, 2003, through June 30, 2004.

⁷E.g., research related to power reactors.

Dated: June 6, 2003.

Robert M. Stephens,
Deputy General Counsel.
[FR Doc. 03-14937 Filed 6-12-03; 8:45 am]
BILLING CODE 7510-01-P

NUCLEAR REGULATORY COMMISSION

* Advisory Committee on Nuclear Waste; Notice of Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 143rd meeting on June 24-25, 2003, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The schedule for this meeting is as follows:

Tuesday, June 24, 2003

10:30 a.m.-10:40 a.m.: Opening Statement (Open)—The Chairman will open the meeting with brief opening remarks, outline the topics to be discussed, and indicate items of interest.

10:40 a.m.-12 Noon: DOE Strategy for Resolving Key Technical Issue (KTI) Agreements (Open)—The Committee will be briefed by DOE representatives on their approach to grouping and resolving all KTI Agreements for the Yucca Mountain Project, including status and path forward.

1 p.m.-2:30 p.m.: Use of Risk Information as Basis for DOE/NRC Agreement Closure (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC Office of Nuclear Materials Safety and Safeguards (NMSS) and DOE representatives on the use of risk information as the basis for closure of technical agreements for the Yucca Mountain Project.

2:45 p.m.-4:15 p.m.: NRC Staff Report on the Risk Significance Ranking of the 293 KTI Agreements (Open)—The Committee will hear an update by the NRC/NMSS staff on how the 293 KTI agreements were ranked into high, medium, and low risk significance.

4:15 p.m.-6 p.m.: Proposed ACNW Reports (Open)—The Committee will discuss proposed ACNW reports on matters considered during this meeting, as well as the proposed ACNW report on Status of KTI Agreement Resolution for the Proposed Yucca Mountain High Level Waste Repository (Tentative).

Wednesday, June 25, 2003

8:30 a.m.-8:35 a.m.: Opening Statement (Open)—The Chairman will make opening remarks regarding the conduct of today's sessions.

8:35 a.m.-10:30 a.m.: Spent Fuel Characterization Project (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC Office of Nuclear Regulatory Research (RES) on a project involving spent fuel loaded in 1985 in a dry cask and opened and inspected in 1999.

10:45 a.m.-11:45 a.m.: Update on Waste Management Related Research (Open)—The Committee will receive an update from NRC/RES staff on the status of the radionuclide transport research as well as other waste-related research activities.

1 p.m.-1:30 p.m.: Plans for Performance Confirmation Working Group (Open)—The Committee will discuss the final agenda, and plans for the Performance Confirmation Working Group scheduled for the next (144th) meeting.

1:30 p.m.-2 p.m.: 2003-04 ACNW Research Report (Open)—An outline and potential plan for the next ACNW Research Report will be discussed.

2 p.m.-2:15 p.m.: Election of Officers (Open)—The members will nominate and elect members to the positions of Chairman and Vice Chairman for the period July 1, 2003 through June 30, 2004.

2:30 p.m.-5:45 p.m.: Proposed ACNW Reports (Open)—The Committee will continue to discuss proposed ACNW reports.

5:45 p.m.-6 p.m.: Miscellaneous (Open)—The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACNW meetings were published in the **Federal Register** on October 11, 2002 (67 FR 63459). 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 Mr. Howard J. Larson, ACNW (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 Mr. Howard J. Larson 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 Mr. Howard J. Larson.

ACNW meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at pdr@nrc.gov, or by calling the PDR at 1-800-397-4209, or from the Publicly Available Records System (PARS) 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).

Videoteleconferencing 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: June 9, 2003.

Andrew L. Bates,

Advisory Committee Management Officer.
[FR Doc. 03-14959 Filed 6-12-03; 8:45 am]
BILLING CODE 7590-01-P

APPENDIX B



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

June 5, 2003

AGENDA
143rd ACNW MEETING
JUNE 24-25, 2003

**TUESDAY, JUNE 24, 2003, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,
ROCKVILLE, MARYLAND**

- 1) ^{10:35} 10:30 - 10:40 A.M. Opening Statement (Open) (GMH/JTL)
The Chairman will open the meeting with brief opening remarks, outline the topics to be discussed, and indicate items of interest.
- 2) ^{10:35 -} ~~10:40~~ - 12:00 Noon DOE Strategy for Resolving Key Technical Issue (KTI) Agreements (Open) (BJG/MPL)
The Committee will be briefed by DOE representatives on their approach to grouping and resolving all KTI Agreements for the Yucca Mountain Project, including status and path forward.
- 3) **12:00 - 1:00 P.M.** *****LUNCH*****
- 3) 1:00 - 2:30 P.M. Use of Risk Information as Basis for DOE/NRC Agreement Closure (Open) (BJG/RKM)
The Committee will hear presentations by and hold discussions with representatives of the NRC Office of Nuclear Materials Safety and Safeguards (NMSS) and DOE representatives on the use of risk information as the basis for closure of technical agreements for the Yucca Mountain Project.
- 4) **2:30 - 2:45 P.M.** *****BREAK*****
- 4) 2:45 - 4:15 P.M. NRC Staff Report on the Risk Significance Ranking of the 293 KTI Agreements (Open) (BJG/NMC)
The Committee will hear an update by the NRC/NMSS staff on how the 293 KTI agreements were ranked into high, medium, and low risk significance.
- 5) ^{4:15 - 4:30} ~~4:15~~ - 6:00 P.M. Preparation of ACNW Report (Open)
The Committee will discuss a proposed report on the following topic:
5.1) Status of KTI Agreement Resolution for the Proposed Yucca Mountain High Level Waste Repository (BJG/NMC) (Tentative)

**WEDNESDAY, JUNE 25, 2003, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,
ROCKVILLE, MARYLAND**

- 6) ~~8:30 - 8:35 A.M.~~
8:35 - 8:45 Opening Statement (Open) (GMH/RKM)
The Chairman will make opening remarks regarding the conduct of today's sessions.
- 7) ~~8:35 - 10:30 A.M.~~
8:45 - 9:45 Spent Fuel Characterization Project (Open) (ML/RKM)
The Committee will hear presentations by and hold discussions with representatives of the NRC Office of Nuclear Regulatory Research (RES) on a project involving spent fuel loaded in 1985 in a dry cask and opened and inspected in 1999.
10:15
10:30 - 10:45 A.M. *****BREAK*****
- 8) ~~10:45 - 11:45 A.M.~~
10:45 - 11:30 Update on Waste Management Related Research (Open) (MTR/RPS)
The Committee will receive an update from the NRC/RES staff on the status of the radionuclide transport research as well as other waste-related research activities.
11:45 - 1:00 P.M. *****LUNCH*****
- 9) ~~1:00 - 1:30 P.M.~~
10:50 - 11:50 Plans for Performance Confirmation Working Group (Open) (MTR/NMC)
The Committee will discuss the final agenda, and plans for the Performance Confirmation Working Group scheduled for the next (144th) meeting.
- 10) ~~1:30 - 2:00 P.M.~~
11:55 - 1:45 2003-04 ACNW Research Report (Open) (MTR/RPS)
An outline and potential plan for the next ACNW Research Report will be discussed.
- 11) ~~2:00 - 2:15 P.M.~~
12:00 - 12:15 Election of Officers (Open) (GMH/JTL)
Members will nominate and elect members to the positions of Chairman and Vice Chairman for the period July 1, 2003 through June 30, 2004.
2:15 - 2:30 P.M. *****BREAK*****
- 12) ~~2:30 - 5:45 P.M.~~
11:55 - 12:55 Preparation of ACNW Reports (Open)
(BREAK as needed)
The Committee will continue its discussion of proposed reports:
11:45 - 12:00
12.1) Status of KTI Agreement Resolution for the Proposed High Level Waste Repository at Yucca Mountain (BJG/NMC) (Tentative)
12.2) Spent Fuel Characterization Project (ML/RKM) (Tentative)
12:00

APPENDIX C: MEETING ATTENDEES

**143RD ACNW MEETING
JUNE 24–25, 2003**

ACNW STAFF

John Larkins
Sher Bahadur
Neil Coleman
Tina Ghosh
Michele Kelton
Howard Larson
Michael Lee
Richard Major
Richard Savio

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION

JUNE 24, 2003

J. Pohle	NMSS
B. Leslie	NMSS
J. Trapp	NMSS
T. McCartin	NMSS
A. Ebaugh	NMSS
V. Klein	NMSS
G. Hatchett	NMSS
D. Esh	NMSS
O. Tabatabai	NMSS
T. Kobetz	NMSS
J. Bradbury	NMSS
B. Ibrahim	NMSS
T. Matula	NMSS
B. Jagannath	NMSS
A. Campbell	NMSS
J. Schlueter	NMSS
K. Chang	NMSS
J. Firth	NMSS
K. Stablein	NMSS
L. Campbell	NMSS
M. Nataraja	NMSS
C. Grossman	NMSS
W. Ford	NMSS
P. Justus	NMSS
T. Bloomer	NMSS

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION (CONT'D)

JUNE 24, 2003 (cont'd)

J. Rubenstone	NMSS
A. Csontos	NMSS
L. Hamden	NMSS
H. Arlt	NMSS
L. Kokjako	NMSS
E. Chow	RES
P. Reed	RES

JUNE 25, 2003

D. Esh	NMSS
M. Wong	NMSS
C. Schulte	NMSS
P. Justus	NMSS
D. Galvin	NMSS
B. Leslie	NMSS
S. Basu	RES
R. Meyer	RES
D. Carlson	RES
F. Dehmel	RES
W. Ott	RES
C. Trottier	RES
A. Schwartzman	RES
P. Reed	RES
T. Mo	RES
E. O'Donnell	RES

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

JUNE 24, 2003

C. Haughney	Department of Energy (DOE)
T. Gunter	DOE
D. Beckman	DOE
B. Andrews	DOE
B. Bradbury	DOE
N. Henderson	Bechtel SAIC Co.
K. Compton	Self
G. Hellstrom	DOE

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

JUNE 24, 2003 (cont'd)

C. Hanlon	DOE
E. v. Tiesenhausen	Clark County, Nevada
M. O'Mealia	Egan & Association - Nevada
J. Shaffner	DOE
M. Malsch	Egan, Fitzpatrick & Malsch
J. Stavnier	PMC Environmental
J. Russell	Center for Nuclear Waste Regulatory Analyses (CNWRA)
J. York	Bechtel SAIC Co.
R. Bernero	Self
L. Reiter	Nuclear Waste Technical Review Board
H. Thompson	Talis-- International LLC
R. Einziger	Argonne National Lab.
Budhi Sagar	CNWRA
J. Kurakami	Japan Nuclear Fuel Cycle Development Inst.
B. O'Connell	NARUC
L. Gue	Public Citizen
M. Peters	DOE
T. Fabian	Nuclear Waste News
F. Rahn	Electric Power Research Inst.
W. Patrick	CNWRA
N. DiNunzio	DOE
A. Gill	DOE

JUNE 25, 2003

J. Russell	CNWRA
J. Shaffner	DOE
N. Henderson	Bechtel SAIC Company
E. v. Tiesenhausen	Clark County, Nevada
R. Einziger	Argonne National Lab.
B. Bernero	Self
L. Gue	Public Citizen
C. Hanlon	DOE

APPENDIX D: FUTURE AGENDA

The Committee approved the following topics for discussion during its 144th meeting, scheduled for July 29–31, 2003:

- **Working Group on Performance Confirmation Plans for the Proposed Yucca Mountain High-level Waste Repository** — The purposes of this working group session are (1) to increase ACNW's technical knowledge of plans to develop and conduct performance confirmation (PC) work for the proposed Yucca Mountain repository, (2) to understand NRC staff expectations for performance confirmation, (3) to review examples of performance confirmation work being planned, (4) to identify aspects of performance confirmation that may warrant further study, and (5) to complement the previous working group session on performance assessment.
- **Risk-Informed Regulation for NMSS: Status Report and Plan for Future Work** - Briefing by and discussions with representatives of the NRC NMSS Risk Task Group regarding the current status of risk-informed regulation for NMSS and the plan for future work.
- **Summer Intern Project** - The ACNW summer intern will update the Committee on the status of her project titled "Assessing Model Uncertainty in Performance Assessment."
- **ACNW September Retreat** - Members will finalize plans for the Committee's September retreat which is scheduled during the 145th meeting (September 16-18, 2003).
- **Committee Visit to Yucca Mountain** - The Committee will finalize plans for the Yucca Mountain Site visit scheduled for the 147th meeting (November 18-20, 2003).
- **Preparation for Meeting with the NRC Commissioners** - The Committee will discuss proposed topics for the ACNW meeting with the NRC Commissioners which is scheduled for Thursday, October 23, 2003, between 10:00 a.m. and 12:00 Noon.

**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

**AGENDA
ITEM NO.**

DOCUMENTS

- 2** **DOE Strategy for Resolving Key Technical Issues (KTIs)**
1. Key Technical Issue Grouping Strategy, presented by Timothy Gunter, DOE (**Viewgraphs**)
 2. Development of the Integrated Technical Basis for the Key Technical Issue Agreement Responses, presented by Robert Andrews, DOE (**Viewgraphs**)
 3. DOE's Approach to Resolution of Key Technical Issue Agreements, presented by April Gill, DOE (**Viewgraphs**)
- 3** **Use of Risk Information as Basis for DOE/NRC Agreement Closure**
4. Use of Risk Information to Address Key Technical Issue Agreements, presented by Robert Andrews, DOE (**Viewgraphs**)
 5. Status of the HLW Risk Insights Initiative, presented by Tim McCartin, NMSS (**Viewgraphs**)
 6. Risk-Informed Issue Resolution, presented by David Esh, NMSS (**Viewgraphs**)

MEETING HANDOUTS (CONT'D)

AGENDA
ITEM NO.

DOCUMENTS

- | | |
|---|--|
| 4 | <u>NRC Staff Report on the Risk Significance Ranking of the 293 KTI Agreements</u> |
| 7 | <u>Spent Fuel Characterization Project</u>

7. Examination and Testing of Spent Fuel Rods, presented by Harold Scott, RES (Viewgraphs) |
| 8 | <u>Update on Waste Management Related Research</u>

8. Update on Waste Management Related Research, presented by Cheryl Trottier, RES (Viewgraphs) |

MEETING NOTEBOOK CONTENTS

**TAB
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DOCUMENTS

Opening Statement by ACNW Chairman

1. Agenda, 143rd ACNW Meeting, June 24–25, 2003, dated June 5, 2003
2. Introductory Statement by ACNW Chairman, Tuesday, June 24, 2003 undated
3. Items of Interest for 143rd ACNW Meeting
4. Introductory Statement by ACNW Chairman, Wednesday, June 25, 2003, undated

2 **DOE Strategy for Resolving Key Technical Issues (KTIs)**

5. Status Report

3 **Use of Risk Information as Basis for DOE/NRC Agreement Closure**

6. Table of Contents
7. Status Report
8. Letter dated January 27, 2003, to Joseph D. Ziegler, DOE, from Janet Schlueter, NRC, Subject: Use of Risk as a Basis for Closure of Key Technical Issue Agreements
9. Summary Highlights of the U.S. Department of Energy/U.S. Nuclear Regulatory Commission Technical Exchange on Risk Information, May 15, 2003, U.S. Nuclear Regulatory Commission, Rockville, Maryland

4 **NRC Staff Report on the Risk Significance Ranking of the 293 KTI Agreements**

10. Memorandum dated June 5, 2003, to Chairman Diaz, et al, NRC, from William D. Travers, NRC, Subject: Final Staff Response to March 19, 2003, Staff Requirements Memorandum on the Waste Arena Briefing - M030303A, with attachments

MEETING NOTEBOOK CONTENTS (CONT'D)

**TAB
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DOCUMENTS

7 Spent Fuel Characterization Project

11. Status Report
12. NUREG/CR-6745, Dry Cask Storage Characterization Project - Phase 1 CASTOR V/21 Cask Opening and Examination (Executive Summary and Conclusions **only**)
13. Thermal Creep of Irradiated Zircaloy Cladding - H. Tsai and M. C. Billone, Argonne National Laboratory, paper presented at the Top Fuel 2003 Conference, Wurzburg, Germany, March 16-19, 2003
14. Examination of Spent PWR Fuel Rods After 15 Years in Dry Storage - R. E. Einziger, H. Tsai, M. C. Billone, and B. A. Hilton (**PREDECISIONAL**)

8 Update on Waste Management Related Research

15. Table of Contents
16. Agenda
17. Status Report
18. Office of Nuclear Regulatory Research 2nd Quarter Operating Plan Sections on Materials Safety Research and Waste Safety Research

9 Plans for Performance Confirmation Working Group Meeting

19. Letter dated June 3, 2003, to Robert R. Loux, State of Nevada, from John Larkins, ACNW, Subject: Working Group Session on Performance Confirmation Plans for the Proposed Yucca Mountain High-Level Waste Repository
20. Draft Agenda for 144th ACNW Meeting, July 29, 2003

Appendix E
143rd ACNW Meeting
June 24–25, 2003

MEETING NOTEBOOK CONTENTS (CONT'D)

TAB
NUMBER

DOCUMENTS

9 (cont'd)

Plans for Performance Confirmation Working Group Meeting

21. Draft Prospectus for ACNW Working Group Session on Performance Confirmation Plans for the Proposed Yucca Mountain High-Level Waste Repository