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

June 6, 2003

MEMORANDUM TO: ACNW Members
ACNW Staff

FROM: Michele S. Kelton
Technical Secretary, ACNW

SUBJECT: CERTIFIED MINUTES OF THE 140TH MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE (ACNW) MARCH 25–27, 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, March 25–27, 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 **Issue:5/19/03**
5/26/2003
By GEORGE M. HORNBERGER

CERTIFIED MINUTES OF THE 140TH MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE MARCH 25–27, 2003

The U.S. Nuclear Regulatory Commission (NRC), Advisory Committee on Nuclear Waste (ACNW or the Committee), held its 140th meeting on March 25–27, 2003, at Two White Flint North, 11545 Rockville Pike, in Rockville, Maryland. The ACNW published a notice of this meeting in the *Federal Register* (68 FR 11879) on March 12, 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 are also available to download from, or review 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, Dr. Raymond Wymer, 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:

- This is the last ACNW meeting for Vice Chairman Dr. Raymond G. Wymer. The Committee wishes him well.
- Chairman Meserve leaves the agency on March 31, 2003, to assume the position as President of Carnegie Institution of Washington.

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- Chairman Meserve leaves the agency on March 31, 2003, to assume the position as President of Carnegie Institution of Washington.

- Michael Lee and Timothy Kobetz have been made permanent staff members. Ramin Assa, ACRS Staff Engineer, has accepted another position in the agency and is leaving at the end of March 2003.

- Several management changes within the Office of Nuclear Material Safety and Safeguards (NMSS) have occurred or will occur in February or March. Of particular interest to the ACNW is that Donald Cool will become the Senior Level Advisor for Health Physics reporting to the Director and Deputy Director, NMSS. Susan M. Frant will become Chief of the Fuel Cycle Facility Branch. Larry Camper will become the Deputy Director of the Licensing and Inspection Directorate in the Spent Fuel Project Office. Daniel M. Gillen will become the Chief of the Decommissioning Branch in the Division of Waste Management.

- On March 10, 2003, the Atomic Safety and Licensing Board (ASLB) rejected the NRC Staff Opinion and ruled that there was a credible risk that fighter jets from the nearby Air Force Base could crash into the above-ground fuel storage casks at the proposed Private Fuel Storage (PFS) facility in Utah. The ASLB judges said PFS could argue that the facility could withstand an F-16 aircraft collision without appreciable health and safety consequences, but it could not rule on that argument because the PFS application focused on low likelihood of accidents rather than a discussion of consequences.

II. WORKING GROUP ON NUCLEAR REGULATORY COMMISSION (NRC) AND DEPARTMENT OF ENERGY (DOE) PERFORMANCE ASSESSMENTS: ASSUMPTIONS AND DIFFERENCES (OPEN)

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

ACNW Member B. John Garrick noted that performance assessment is a vital part of the eventual license application for Yucca Mountain because it is the basis for the technical decisions. The purposes of the working group session are fourfold: first, to increase ACNW's technical understanding and knowledge of the performance work done to date for the Yucca Mountain repository; second, to identify areas in the analysis that may warrant increased realism; third, to understand the different approaches taken by the NRC and the Department of Energy (DOE); and fourth, to provide a reference or baseline for a follow-up working group session on performance confirmation. Dr. Garrick described how performance assessments ought to be modularized in such a way that they can be divided into visible expressions of the driving contributors to the performance or to the risk.

Dr. Garrick introduced the keynote speaker, Dr. Joe Payer, as a Professor of Materials Science and Engineering and Director of the Yeager Center for Electrochemical Sciences at Case Western Reserve University. He was a member of the 1999 TSPA-Viability Assessment peer review panel that was formed to provide DOE with a formal independent critique of that report. In addition, he chaired DOE's Waste Package Materials Performance Peer Review Panel and

currently is serving part-time on a DOE Science and Technology Review Panel in support of DOE's Director, Office of Civilian and Radioactive Waste Management.

Keynote Presentation, Dr. Joe Payer (Case Western Reserve University)

Dr. Joe Payer gave the keynote address entitled "Realism in Simulating Long-Term Waste Package Corrosion and Radionuclide Source Term." He talked about the composition of the water that could drip onto waste packages, the hypothetical composition of water on metal surfaces and waste package barrier layers, and the composition of the water that may enter waste packages and how that composition may evolve until the water is released. Corrosion is clearly identified as the primary determinant of waste package lifetime. It's the most likely degradation process that will determine when packages get penetrations and what the form and distribution of those penetrations will be. Dr. Payer discussed penetration of waste packages, various degradation modes, stress corrosion, mechanical damage, and embrittlement.

Localized corrosion, pitting, crevice corrosion, and stress corrosion cracking are the most likely degradation modes that can occur in the Yucca Mountain environment and with materials that are being considered by DOE. Basing materials selection and design on high crevice corrosion resistance is a prudent and well-accepted way to proceed. Corrosion processes and rates depend on the corrosion resistance of the material and the environment to which the material is exposed. The repository environment is changed in the thermal period by evaporation and concentration. In the beginning there is a very low concentration of salts, but as the water evaporates, the salts become more and more concentrated. So one of the real challenges is to determine what kinds of concentrated solutions will likely evolve.

Dr. Payer noted that the flow of groundwater through Yucca mountain is a key performance issue. The climatology and the amount of infiltration will determine how much water comes down through the unsaturated zone above the repository. At the repository level, infiltrating water can interact with waste package and drift materials. If the water inside the waste packages goes through the cladding or if there are clad failures, the water will come in contact with the fuel, and that's where the radionuclide mobilization release starts. The water could ultimately move out of that area through the invert material and on down to the saturated zone.

Dr. Payer said that the issue here is what is the realistic range of environments at Yucca Mountain? What is the realistic range of materials' susceptibility, the corrosion resistance of Alloy C-22 and titanium? What's the likelihood of overlap in these ranges? What is going to occur in that area of overlap in these ranges? In an ideal world you'd have no overlap at all.

Another issue is deliquescence of various salts that are on the surface. The deliquescence shows the relative humidity versus temperature and at what point you would get an aqueous phase if sodium nitrate, sodium chloride, or magnesium chloride crystals developed on the waste package. At what relative humidity would moisture start to form? Data are available to help us look at that.

The goal of looking at the source term is to define a set of models that capture reality. What that means is the models recognize the important processes and the dependencies of those processes and do so in terms that are relative and meaningful to Yucca Mountain.

Introduction to DOE's Total System Performance Assessment (TSPA) Model

Dr. Abe van Luik (DOE) talked about what NRC requires of DOE regarding realism and conservatism and requirements for the performance assessment (PA) used to generate compliance with the post-closure performance objectives. He mainly discussed DOE's perspective on requirements under NRC's regulations in 10 CFR Part 63. He noted that the use of conservatism to manage uncertainty has implications for risk-informed reviews. DOE believes that realism is desirable but not required. Adding realism where practicable is a prudent approach because it allows more meaningful safety margin evaluations and improved understanding of system performance. Dr. Rod Ewing asked Dr. van Luik to clarify his comment that as realism has been added to DOE's PA, long-term safety estimates improved. Does that mean the dose always drops, or uncertainty decreases? Dr. van Luik responded that dose doesn't always drop with every nuance of change made. But DOE did three separate PAs during the site recommendation period. They all pass muster when it comes to the 10,000-year requirements, but the peak doses keep stepping down. Peak dose is always way beyond 10,000 years. Dr. Garrick asked whether the license application date is still proposed for the end of 2004. Dr. van Luik responded that the current schedule remains in effect, but that a "frantic" reassessment was presently underway to evaluate whether the schedule was still achievable.

Introduction to NRC's Total-System Performance Assessment (TPA)

Dr. Andrew Campbell (NRC) reviewed the background and role of NRC's total-system performance assessment (TPA) computer code capability. The role of NRC's TPA code is to enhance NRC's independent review capability to evaluate DOE's PA, to understand and evaluate DOE's models, assumptions, and data, and to provide flexibility to evaluate the completeness of DOE's modeling approaches. The TPA code also helps provide risk insights to help establish priorities in technical reviews. Overall, use of the TPA code provides confirmatory analyses of DOE's modeling approach and results.

Overview of DOE's TSPA

Mr. Peter Swift (Sandia National Laboratories) reviewed the status of DOE's Total System Performance Assessment (TSPA) and summarized the TSPA methodology and its major model components. The TSPA process includes (1) screening of features, events, and processes; (2) developing models and their scientific basis for each process; (3) identifying uncertainty in models and parameters; (4) constructing an integrated TSPA model using all retained processes; and (5) evaluating total system performance (individual protection, groundwater protection, and human intrusion) through Monte Carlo simulations.

Overview of NRC's TPA

Mr. Christopher Grossman (NRC) gave an overview of approaches and assumptions for The TPA computer code version 4.1. TPA performs probabilistic dose calculations for given time periods and accounts for (1) essential features of the engineered and natural barriers, (2) chemical and physical processes affecting waste package degradation and release to the biosphere, (3) uncertainties and spatial variability of model parameters and future states, and (4) lifestyle characteristics of the reasonably maximally exposed individual. Scenarios analyzed include a nominal case with climate change and seismic activity and disruptive cases with faulting and igneous activity. TPA uses approaches based on fundamental principles and available data.

Source Term Module Under TSPA

Dr. Robert Andrews (Bechtel SAIC Company, LLC) reviewed elements of DOE's source term model. He described the factors that can potentially affect emplacement drift environments, including coupled thermal-chemical effects on water chemistry, mechanical effects of rock fall, humidity, and groundwater seepage into drifts. Dr. Andrews discussed the degradation models for the drip shield and waste package, including processes of general corrosion and stress corrosion cracking. Juvenile failure of waste packages is included in the TSPA model, but DOE estimates that the expected number of improperly annealed waste packages is only ~0.26 out of ~12,000 waste packages. The first drip shield failures occur at about 20,000 years as a result of general corrosion. Bulk chemistry within the waste package is modeled under well-mixed, oxidizing conditions. Dr. Andrews also described the possible degradation of fuel cladding via perforation and unzipping.

Source Term Module Under TPA

Dr. David Esh (NRC) provided a review of NRC's source-term modeling. This included conceptualizations of how groundwater could enter repository drifts and come into contact with drip shields and waste packages. The amounts of water that could actually enter corroded waste packages in the future appears to be affected by diversion around drifts caused by capillary barriers and by the tendency for water to run down walls rather than drip. Two conceptual models for water contact are the "bathtub" and the "flow-through" models. Dr. Esh reviewed processes of drip shield corrosion, uniform and localized corrosion of waste packages, and waste package stress corrosion cracking. This discussoin was followed by a review of various models for dissolution of spent nuclear fuel within the waste form. The current TPA code version simulates advective transport of radionuclides out of waste packages. TPA version 5.0 will include transport by diffusion in films of water inside and outside of waste packages. Dr. Esh concluded that NRC models are primarily data based, use simple concepts, and provide to the NRC staff the flexibility to evaluate data and model uncertainties for the proposed Yucca Mountain site.

Simplified Models of Key Contributors to Dose Traced Through Various Modules (DOE)

Mr. Peter Swift (DOE) gave a talk entitled "Component Performance and Key Contributors to Nominal Scenario Class Dose in the U.S. Department of Energy Total System Performance Assessment." He reviewed the overall results for nominal repository performance, including TSPA total dose, major contributors to dose over time, and the chronology of major events in nominal performance. Mr. Swift showed changes in radionuclide inventories over time. He showed estimates for major chronological events, such as stages in climate change, timing for peak waste package surface temperatures, first drip shield failures, waste package failures due to defects and general corrosion, and relative transport times in the natural system. He traced Np-237 and Tc-99 through the system component by component (i.e., waste form, waste package, invert, and unsaturated and saturated zones). Mr. Swift noted that TSPA models and analyses for the license application are currently under development.

Simplified Models of Key Contributors to Dose Traced Through Various Modules (NRC)

Mr. Tim McCartin (NRC) gave a talk titled "Understanding Performance Assessment Results." He noted that estimated doses within 10,000 years are influenced by very mobile nuclides, I-129 and Tc-99. Estimated doses beyond 10,000 years are strongly influenced by Np-237, which is somewhat mobile. He described how performance assessment results are complex and reflect nuclide-specific behavior, temperature dependence, and the "masking" effects of redundant barriers. The NRC staff is currently studying sensitivities within and relationships between various attributes (waste package, water flow into waste packages, waste forms, unsaturated and saturated zone transport). The results of these studies will provide perspective to understand and interpret performance assessment results. Waste package performance is easy to explain and understand (breached vs. not breached) despite complexities in technical basis. Mr. McCartin described the performance sensitivities for waste forms and for water flow into waste packages. He discussed dissolution rates of spent fuel, solubility limits used for radionuclides of interest (within waste packages), rates of deep groundwater percolation, and the relative degrees of flow diversion or enhancement. Mr. McCartin also discussed the sensitivity of retardation in the Calico Hills nonwelded vitric unit, which is below the repository and covers about 50 percent of the repository "footprint." Poorly mobile radionuclides like Am-241 and Pu-240 are strongly retarded by the Calico Hills vitric unit. Np-237 is also retarded by this unit. All three radionuclides can also be strongly retarded in saturated valley fill alluvium. In his summary, Mr. McCartin observed that a large number of waste package failures are needed for I-129 and Tc-99 to be important due to their limited inventory. Np-237 is sensitive to solubility limit and water flow and to the presence of the Calico Hills nonwelded vitric unit. In the saturated zone, Np-237 is sensitive to variations in retardation, has limited sensitivity to matrix diffusion, and limited sensitivity to the extent of alluvium (assuming a minimum of 1 km alluvium in the flowpath).

STAKEHOLDER PRESENTATIONS

Dr. Don Shettel (Geosciences Management Institute, Inc., representing the State of Nevada) gave a talk entitled "Near-field Environments and Corrosion." The talk described various water

environments within Yucca Mountain, and noted water types that include precipitation, unsaturated fracture flow, matrix pore water, and water in a thermal refluxing zone. Dr. Shettel described various in-drift chemical and physical processes, and focused on the processes of acid volatilization and hydrolysis of salts. He explained how residual salt solutions and condensates become acidic with thermal evaporative concentration. Deliquescence of salts causes accumulation of liquid on waste package canisters. During hydrolysis of salts, HNO_3 vapor is given off. Dr. Shettel estimated a corrosion rate of 678 microns per year, which means that a hole could develop through 2 cm of C-22 in less than 30 years. Dr. Shettel concluded that in-drift processes are more complicated than admitted by DOE, that corrosion rates are significantly higher for evaporating solutions and their condensates (0.1 to 1.0 mm/yr, up to 10), that subboiling immersion testing of engineered barrier materials in groundwater is unrealistic and nonconservative, and that the vadose zone is not a good environment for a high-level waste repository.

Dr. John Walton (University of Texas at El Paso, representing Nye County, Nevada) gave a talk titled "Evaporation, Reconstitution, and Water Chemistry." The talk noted the importance of water chemistry in estimating corrosion for all engineered barrier materials. A theme of the talk was the concern that physical separation processes have not been considered in DOE's analyses. During evaporation, different minerals deposit at different locations. He showed salt separations in two examples: deposits from a sidewalk and those near a desert spring. Dr. Walton believes that natural air movements within Yucca Mountain have not been fully considered, that construction effects increase the air permeability of the rock, that the climate could be dryer than anticipated, and that the period of evaporation may last well beyond current projections. Dr. Walton concluded that physical separation of minerals is certain to occur, that potentially aggressive environments could be created for titanium drip shields and Alloy C-22 waste packages, that these environs will have high spatial and temporal variability, and that biological and other chemical processes will also be important.

Mr. Englebrecht von Tiesenhausen (representing Clark County, Nevada) gave a talk titled "Clark County Comments — What is Our Concern, and Why are We Still Concerned. Temperature, Coupled Processes, and Corrosion." He referred to a letter to NRC's Chairman Meserve (dated August 13, 2001) that recommended continued exploration of the chemical issues associated with repository design, such as "hot" versus "cold" repository or the use of backfill. Mr. von Tiesenhausen expressed concerns that DOE has selected the "hot" repository option for the design to be proposed in a license application. He was also concerned that DOE is still using concentrated J-13 well water for seepage brines. He noted that a previous State of Nevada presentation to the Board on Radioactive Waste Management (of the National Academies) indicated that evaporation of concentrated unsaturated zone pore waters will produce acidic environments, while evaporation of J-13 well waters would produce more benign alkaline environs. Rock dust with its major and minor chemical constituents will also influence the chemistry of evaporated solutions. Mr. von Tiesenhausen concluded that fully coupled thermo-hydro-chemical processes may be impossible to model at this time, that chemical environs of the waste packages are likely to be very complex, and that predicting long-term corrosion of Alloy C-22 using J-13–based waters is probably not realistic.

Mr. Atef Elzeftawy (representing the Las Vegas Paiute Tribe) read a statement into the record regarding tribal concerns. He stated that the tribe should be allowed to play a major role in the Yucca Mountain program, that the tribe has major concerns about the policies and technical direction of the Yucca Mountain project and the DOE, U.S. Environmental Protection Agency (EPA), and NRC roles in the program. For example, the Tribe believes that DOE's TSPA should not be accepted as the method of testing and evaluating the suitability of the Yucca Mountain site. The Tribe seeks no adverse impact on the health of the tribal population or on the economic development of their Snow Mountain Reservation.

Dr. John Kessler (representing the Electric Power Research Institute) gave a talk titled "When Realism Is and Is Not Needed in TSPAs." He pointed out that conservatism (as opposed to realism) is often easier to defend, especially during licensing proceedings. It serves to provide boundaries for license conditions and maintains a connection to performance confirmation. However, conservatism may distort the relative importance of individual barriers. Dr. Kessler gave an example of this from the diffusive release model in EPRI's TSPA code. The EPRI model assumes excellent contact between all regions of the engineered barrier system, but in reality spent fuel would not be in close contact with rock walls of tunnels. The EPRI model also assumes continuous water pathways through the engineered barriers, but in reality pathways would be much more limited. Dr. Kessler showed model results that illustrate how an estimated 10,000 year dose is strongly affected by the conservative diffusion model. He concluded that better relative unsaturated/saturated zone performance would be apparent if a more realistic diffusive release model were used. Dr. Kessler said that it is reasonable to replace uncertainty with pessimistic assumptions to establish robustness for the adjudicatory process, to provide boundaries for license conditions, and to provide "reasonable expectation" levels of confidence for compliance with regulations.

WORKING GROUP ROUNDTABLE PANEL DISCUSSION ON TSPA/TPA

The five expert panelists (Payer, Ewing, Bullen, Morgenstein, and Latanision) participated in a panel discussion that was moderated by Member Garrick.

Dr. Ron Latanision (Massachusetts Institute of Technology) focused on temperature issues because all of the modes of corrosion degradation, including uniform corrosion rates and the rates of localized corrosion are affected by temperature, as well as by the environmental chemistry and state of stress of the material.

Dr. Joe Payer (Case Western Reserve University) posed a number of questions about the importance of the environment when evaluating corrosion. Given a population of environments and a range of corrosion resistance for a material, the whole issue is where they overlap, because that's where corrosion can occur. Can these conditions be correlated with a real repository? How, when, and where will the corrosive conditions occur? How much corrosion will there be? Will the adverse environments persist? Dr. Payer noted that one of the things lost in most testing and thermodynamic modeling is that researchers point to a given condition and describe what can happen under that condition. But in real systems, the aqueous solutions aren't constant—they evolve. With respect to waste package environments, if there's something in there that can consume the acidity, then the solution will become more alkaline. If there's something that's consuming the hydroxyl ions, the environment will become more acidic. Dr. Payer observed that we know about these processes; it's just a matter of working them in. He asked will these environments form? Will the environments persist? If they don't persist, if they stifle or rest or go away because the package becomes dry in that area, could they reform and start again?

Dr. Maury Morgenstein (Geosciences Management Institute, Inc.) focused on the vadose zone environment. He said that it's a very complex area that we don't understand at present—the very basics of the hydrogeochemistry. He noted the likelihood that water entering the soil zones within the region could have highly variable chemistry in spatial terms. This water will evolve as it migrates down through the vadose zone and through the repository environment.

Dr. Morgenstein referred to a basic lack of understanding of the hydrochemical system, and noted that engineered barrier system items, such as Alloy C-22 and Titanium-7, can react with water that's been altered by the temperature of the system and the variations of the dynamics of the system as it changes through time. He believes that the project is probably moving too fast to be able to collect and acquire the needed information. He noted that there are obviously degrees of retardation offered by the natural system, but it's not clear that this degree of retardation is sufficient to meet licensing requirements. He also noted the importance of using vadose zone pore water chemistry rather than the chemistry found in the saturated zone.

Dr. Dan Bullen (Iowa State University) covered a broad range of issues, including evolution of waste package design and changes in the understanding of how much water moves through Yucca Mountain. He focused on thermal- and biosphere-related issues. Dr. Bullen noted the difficulty of dealing with uncertainties if the models don't include key processes that relate to those uncertainties. For example, the DOE Supplemental Science and Performance Analysis examines both high- and low-temperature operating modes. But dependence of corrosion on temperature is not included in some calculations, and this alone can have a significant effect. In some cases there's no simulation of localized corrosion because the localized corrosion model wasn't used as wasn't data to support it at the time. Dr. Bullen feels that a cooler repository design may be desirable, not only because it's less difficult to model but because it's more closely related to the current ambient conditions at Yucca Mountain. In other words, the

less the mountain is perturbed the better. Perhaps a cooler design would not produce the high chloride concentrations and high salt concentrations that have been discussed as a concern. Dr. Bullen expressed concern about the 3000-acre feet of water dilution factor because it might be masking some significant problems associated with the biosphere model. He felt that the model is not realistic and not conservative because a small source of water with a high concentration that's not significantly diluted may give a significantly greater dose than what is predicted with a great dilution factor.

Dr. Rod Ewing (University of Michigan) noted that if he had DOE's job, or NRC's job, the very first thing he would do is a performance assessment, because the performance assessment informs one about how things are connected. But although the exercise would be informative, the results would almost certainly be wrong. Dr. Ewing noted that the modeled system is quite nonlinear. The fact that one-off and one-on analyses can be done so readily suggests that the modeled parameters are probably not coupled well enough. Dr. Ewing noted that evolution of repository boundary conditions over time would be challenging to model, (water chemistry, temperature, porosity, permeability, etc.). He said that the chemistry of this system may be the dominant driving force in terms of the end result. Although the TSPA computer code has chemistry in the model, from a geochemical point of view it's at a pretty primitive level. And the remarkable extrapolation over time of all the processes makes for a very tough problem. How to deal with these problems? Dr. Ewing feels that if we both look at the TSPA and the TPA computer codes in a very natural and understandable way, in terms of modeling, "they've evolved into a corner, talking one to the other," but what's missing, and it's not part of the license application process, is the broader context in terms of what can be done by modeling. He presented the analogous case of future climate modeling and the difficulties in that arena. A key question in climate modeling is how can we extrapolate results before the uncertainty hinders the ability to make a policy decision? In the waste arena, the question should be how far can results be extrapolated before the uncertainty is so large we can't reasonably say that the regulation has been complied with?" Dr. Ewing suggested that it would be informative to look around at other systems, look for complex systems and ask what the limitations are and see if we're fooling ourselves. Dr. Ewing concluded that he doesn't understand how the uncertainty of long-term extrapolation will be handled, and he sees a need for better ways to judge the adequacy of models and modeling.

PUBLIC COMMENTS

Dr. Atef Elzeftawy (representing the Las Vegas Paiute Tribe) discussed how the researchers in the Manhatten Project looked at uncertainty in their theoretical work and ultimately demonstrated the results. This was their equivalent of "performance assessment." He also mentioned quantum mechanics theory and that the physicist Feynman said that it wasn't clear what quantum mechanics is, that it wasn't understood in all details, but that it works.
Dr. Elzeftawy observed that if we can come up with performance assessment models that work, that helps the decision-making process.

Ms. Judy Treichel (Nevada Nuclear Waste Task Force) observed that it was "refreshing" to hear the "knock down, drag out" discussions, but felt that they didn't last long enough. She described the different perspectives of Yucca Mountain seen by farming families living in the Amargosa Valley, who get their water from wells and consume many of their own agricultural products ("...they don't have to just eat tomatoes and cucumbers, they can eat pistachios, they can drink the milk from the cow who drinks out of the same tap..."). From their perspective, their risks will be assigned by someone else. Ms. Treichel stated that her real fear relates to the biases of the various presenters and that she is worried that "...NRC is sort of pushing to make this thing [Yucca Mountain] okay." She feels that NRC would like to have Yucca Mountain, and that people who don't have to live with Yucca Mountain would be "...way more eager to have uncertainty or to feel that it can be accepted than other people." Ms. Treichel was skeptical that the process was "totally fair."

Dr. Roger Staehle described examples of mechanical failures that have made an impression on him, including helicopter rotor blades and nuclear reactor pipe failure. He noted the very complex nature of Yucca Mountain with regard to surface chemistry, temperature, and mathematics. He recommends a bounding approach to the problem to make predictions, taking into consideration a "reasonable" set of worst cases, but not a worst case, and to use this set of worst cases as a basis to make progress with modeling.

Mr. Steve Frishman (representing the State of Nevada) noted that John Kessler had a viewgraph that said pessimism can be replaced with more realism at a time when more confidence is required, perhaps at a later stage of repository development. Mr. Frishman said there's no room for this staging concept under the current regulation. The NRC's rule as it stands today is not a staged rule. The confidence that is necessary is the "...confidence that can be elicited through demonstration at the time a construction authorization is issued, if it is to be issued." Mr. Frishman noted that the TSPA computer code isn't just a useful tool for understanding what is known or not known. He stated that under the licensing rule the outcome of the performance assessment is the statement of compliance (or not). One of Mr. Frishman's concerns is that performance assessment results will be translated into a decision for reasonable expectation or reasonable assurance that can lead to another level of subjectivity.

Dr. Garrick noted that the ACNW "...does its best to address the technical issues and is not the body that makes the decision about whether or not a license is in compliance. ACNW Members are not license experts, are not regulation experts. ACNW is here to complement the regulatory process but be focused on what is going on from a technical standpoint."

III. NRC AND THE ENVIRONMENTAL PROTECTION AGENCY MEMORANDUM OF UNDERSTANDING (MOU) RELATED TO DECOMMISSIONING AND DECONTAMINATION OF CONTAMINATED SITES (OPEN)

[Mr. Howard J. Larson was the Designated Federal Official for this portion of the meeting.]

Dr. R. G. Wymer introduced Mr. Eric Pogue, NMSS, who discussed the current Memorandum of Understanding (MOU) between the NRC and the DOE regarding decommissioning of NRC-licensed facilities. He noted that its purpose was to avoid dual regulation of facility decommissioning.

He noted that the staff has had an active outreach program for this MOU, including a November 2002 public meeting with both EPA and NRC representatives leading and participating in open discussions. The NRC has also participated in State meetings and meetings of interested and affected organizations. In response to a question from the Committee, he said it is still in the early stages of implementation and it is therefore too early to measure the degree of success that is to be expected from this MOU.

The staff indicated that it will continue to coordinate with EPA per the MOU and will continue to request legislation to completely eliminate the several "loopholes" in the MOU.

Committee Action: None at this time. This was an information-only briefing. However, the Committee indicated that once experience is gained in the implementation of the MOU, it would expect an update.

IV. DISCUSSION OF SELF-ASSESSMENT SURVEY PRELIMINARY RESULTS (OPEN)

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

The status of the ongoing work on the ACRS/ACNW self-assessment was discussed. The SECY paper containing this self-assessment is due to the Commission by May 31, 2003. A draft of this SECY paper will be available for discussion during the April 22–23, 2003, ACNW meeting.

V. ACNW ACTION PLAN (OPEN)

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

In June 2002, the ACNW updated and finalized its Action Plan (the Plan) to reflect new and continuing Committee priorities for fiscal years (FYs) 2002 and 2003. A primary purpose of the Plan is to guide the Committee in carrying out its mission as a Federal Advisory Committee. In addition, the Plan identifies the Committee's mission, vision, desired outcomes, commitments, goals, objectives, and priority topics. In issuing its Plan, the Committee committed to update it on an annual basis and track the progress and outcomes of the process improvements. During

its 139th meeting, the ACNW's Executive Director discussed some general approaches for updating the Plan. At its 140th meeting, these discussions continued but in more detail.

In the current Plan, the Committee identified priority topics that would be the focus of future Committee reviews. The current priority topics are ranked using two tiers, as noted below:

	First-Tier Topics
1.	Resolution of Key Technical Issues
2.	Risk-Informing the High-Level Waste Licensing Process
3.	Transportation of Radioactive Waste
4.	Decommissioning Options
	Second-Tier Topics
1.	Performance Confirmation and Long-Term Monitoring for Yucca Mountain
2.	Waste-Related Research
3.	Proposed Private Fuel Storage Facility
4.	Low-Level Radioactive Waste

To determine where updates to the Plan might be warranted, the ACNW staff identified some newly proposed briefing topics during the 140th meeting. Some of these topics correspond to the existing Action Plan priority tier structure. Some of the new topics are outside of this structure but fall within the current scope of NRC staff activity. For example, the forthcoming NRC licensing of the HLW repository at Yucca Mountain is currently scheduled to begin in late 2004. ACNW oversight of this activity falls within the purview of the Committee charter but is not explicitly acknowledged in the current plan.

Between now and the next Committee meeting, it was agreed that the ACNW Members would review the proposed list of future briefing topics, amend the list as appropriate (taking into account the evolution of NMSS programs), and decide what specific updates and/or revisions to the Action Plan might be warranted.

VI. RECONCILIATION OF ACNW COMMENTS AND RECOMMENDATIONS

[Mr. Howard J. Larson was the Designated Federal Official for this portion of the meeting.]

- The Committee considered the response from the NRC's Executive Director for Operations (EDO), dated January 10, 2003, to the ACNW letter dated October 17, 2002, concerning orphan sources.

  The Committee decided that it would defer its evaluation of the EDO/staff response until the report of the Interagency Working Group on Radiological Dispersal Devices is publicly available, in light of the statement in the EDO response "we are confident that the Working Group's final report will provide information for Commission consideration in the areas identified in your recommendations."

- The Committee considered the response from the EDO, dated February 21, 2003, to the ACNW report dated January 7, 2003, concerning the Transportation Working Group Meeting conducted by the ACNW on November 19–20, 2002.

  The Committee did not fully accept the EDO's response with regard to full-scale testing and the use of improved computer codes. The Committee will consider a reply to the EDO subsequent to the follow-on Transportation Working Group Meeting during the April 2003 Committee Meeting.

routine ceremonies. Also included are electronic copies of documents created using electronic mail and word processing. Recordkeeping copies of files relating to ceremonies of an historical nature are proposed for permanent retention.

3. Department of Defense, Defense Security Service (N1–446–03–1, 5 items, 5 temporary items). Short term records relating to information assurance activities. Included are records relating to program planning and management, network access, and operation of the agency's test laboratory. Also included are electronic copies of documents created using electronic mail and word processing. This schedule authorizes the agency to apply the proposed disposition instructions to any recordkeeping medium.

4. Department of Defense, Defense Security Service (N1–446–03–3, 6 items, 6 temporary items). Records relating to industrial security. Included are records relating to such matters as site visits, field office activities, meetings, and educational programs. Also included are electronic copies of documents created using electronic mail and word processing. This schedule authorizes the agency to apply the proposed disposition instructions to any recordkeeping medium.

5. Department of Justice, National Drug Intelligence Center (N1–523–03–1, 7 items, 7 temporary items). Software licensing agreement and disclaimer files, technology and equipment files, and computer system security backup records. Also included are electronic copies of records created using electronic mail and word processing.

6. Federal Emergency Management Agency, National Security Directorate (N1–311–03–1, 5 items, 2 temporary items). Routine administrative data contained in an electronic information system used to support continuity of government operations. Also included are electronic copies created using e-mail and word processing. Proposed for permanent retention are recordkeeping copies of briefing files and subject files relating to continuity of government operations programs as well as substantive data contained in an electronic information system.

7. National Archives and Records Administration, Office of Records Services—Washington, DC (N1–64–03–3, 3 items, 3 temporary items). Electronic and microfiche versions of records relating to permanently valuable records that have been accessioned into the National Archives of the United States.

Dated: March 6, 2003.

Michael J. Kurtz,

Assistant Archivist for Record Services—Washington, DC.

[FR Doc. 03–5831 Filed 3–11–03; 8:45 am]

BILLING CODE 7515–01–P

NATIONAL FOUNDATION ON THE ARTS AND THE HUMANITIES

National Endowment for the Arts; Leadership Initiatives Advisory Panel

Pursuant to section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463), as amended, notice is hereby given that a meeting of the Leadership Initiatives Advisory Panel will be held by teleconference from 2:30 p.m.–3:30 p.m. on Tuesday, March 18, 2003 in Room 710 at the Nancy Hanks Center, 1100 Pennsylvania Avenue, NW., Washington, DC 20506.

This meeting is for the purpose of Panel review, discussion, evaluation, and recommendations on financial assistance under the National Foundation on the Arts and the Humanities Act of 1965, as amended, including information given in confidence to the agency. In accordance with the determination of the Chairman of May 2, 2002, these sessions will be closed to the public pursuant to subsection (c)(4),(6) and (9)(B) of section 552b of Title 5, United States Code.

Further information with reference to this meeting can be obtained from Ms. Kathy Plowitz-Worden, Panel Coordinator, National Endowment for the Arts, Washington, DC 20506, or call 202/682–5691.

Dated: March 7, 2003.

Kathy Plowitz-Worden,

Panel Coordinator, Panel Operations, National Endowment for the Arts.

[FR Doc. 03–5951 Filed 3–11–03; 8:45 am]

BILLING CODE 7537–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Nuclear Waste; Notice of Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 140th meeting on March 25–27, 2003, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The schedule for this meeting is as follows:

Tuesday, March 25, 2003, Conference Room T–2B3, 11545 Rockville Pike, Rockville, MD

Working Group on NRC and DOE Performance Assessments: Assumptions and Differences (Open)

10 a.m.–10:10 a.m.: Introductory Comments, Statement of Objectives and Overview (Open)—The Chairman will open the meeting and then turn it over to the Working Group Chairman who will state the objectives of the Workshop and provide an overview of the sessions.

The theme of the working group will be how to achieve appropriately credible and realistic performance assessment models for the proposed high-level waste repository at Yucca Mountain, NV. While the total scope of the performance assessments will be discussed, realism of the source term work will be emphasized because it will be a key driver in the performance of the proposed repository.

10:10 a.m.–10:50 a.m.: Keynote Presentation: Realism in Simulating Long-Term Waste Package Corrosion and Source Term (Open)—The Committee will hear a presentation and view on the development of a realistic source term by a distinguished expert.

11:10 a.m.–11:35 a.m.: Introduction to DOE's Total System Performance Assessment (TSPA) Model (Open)—The Committee will hear presentations by and hold discussions with a representative from DOE regarding the DOE's Total System Performance Assessment (TSPA).

11:35 a.m.–12 noon: Introduction to NRC's Total-System Performance Assessment (TPA) (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC's Office of Nuclear Material Safety and Safeguards (NMSS)/Division of Waste Management (DWM) regarding the Total-System Performance Assessment.

1 p.m.–2:20 p.m.: Overview of TSPA and TPA: Assumptions and Differences in Approach (Open)—The Committee will hear presentations and hold discussions with representatives of the NRC's NMSS/DWM and DOE on the overview of TSPA and TPA focusing on:

- Infiltration/tunnel dripping
- Source Term
- Near Field
- Unsaturated Zone
- Saturated Zone
- Biosphere and dose

3 p.m.–5 p.m.: Source Term Module (Open)—The Committee will hear presentations by and hold discussions with representatives from NRC's NMSS/DWM and DOE regarding the source term module.

5 p.m.–5:30 p.m.: Public Comments (Open)—The Committee will make time available for comments from the public.

Wednesday, March 26, 2003, Conference Room T–2B3, 11545 Rockville Pike, Rockville, Maryland

Working Group on NRC and DOE Performance Assessments: Assumptions and Differences (Open) (Continued)

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.–10:35 a.m.: Simplified Models of Key Contributors to Dose Traced through Various Modules (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC's NMSS/DWM and DOE regarding the key contributors as traced through various modules in TSPA and TPA, including:

- Infiltration/tunnel dripping
- Source Term
- Near Field
- Unsaturated Zone
- Saturated Zone
- Biosphere and dose

10:50 a.m.–12:45 p.m.: Presentations by representatives of the State of Nevada, Counties, Las Vegas Paiute Tribe, and Electric Power Research Institute (Open)—The Committee will hear presentations by and hold discussions with representatives of the State of Nevada, Counties, LasVegas Paiute Tribe, and Electric Power Research Institute regarding the working group on NRC and DOE performance assessments for the proposed high-level waste repository at Yucca Mountain, NV—assumptions and differences.

2:15 p.m.–3:15 p.m.: Working Group Roundtable Panel Discussion on TSPA and TPA: Assumptions and Differences (Open)—The Committee will have a roundtable panel discussion on the topics reviewed during the Working Group on NRC and DOE performance assessments for the proposed HLW repository at Yucca Mountain, NV—assumptions and differences.

3:15 p.m.–4:15 p.m.: Committee Summary Discussion (Open)—The Committee will summarize the day's discussion.

4:30 p.m.–5:20 p.m.: Public Comments (Open)—The Committee will summarize the major themes developed during the Working Group.

5:20 p.m.–5:30 p.m.: Closing Comments by Working Group Chairman (Open)—The Working Group Chairman will conclude the formal sessions with some brief remarks.

5:30 p.m.–6:15 p.m.: Preparation of ACNW Report (Open)—The Committee will discussed the principal points in a proposed ACNW report on TSPA/TPA Working Group.

Thursday, March 27, 2003, Conference Room 2B3, 11545 Rockville Pike, Rockville, Maryland

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

8:35 a.m.–9:10 a.m.: NRC/EPA Memorandum of Understanding (MOU) Related to Decommissioning and Decontainmination of Contaminated Sites (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding this recent (October 2002) MOU between the NRC and the Environmental Protection Agency.

9:10 a.m.–9:45 a.m.: Discussion of Self-Assessment Survey Preliminary Results (Open)—The Committee will discuss the preliminary results of the self-assessment survey of the ACNW's recent activities.

10 a.m.–12 noon: ACNW Action Plan (Open)—The Committee members will discuss an update to the ACNW 2002–2003 Action Plan.

1 p.m.–2:45 p.m.: ACNW Action Plan (Open)—The Committee will continue discussions related to an update of ACNW 2002–2003 Action Plan.

2:45 p.m.–3 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, and questions may be asked only by members of the Committee, its consultants, and staff. 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. e.t., 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 notices, meeting transcripts, and letter reports are now available for downloading or viewing on the Internet at *http://www.nrc.gov/ACRSACNW.*

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. e.t., 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 videoteleconferencing link. The availability of videoteleconferencing services is not guaranteed.

Dated: March 6, 2003.

Andrew L. Bates,

Advisory Committee Management Officer.

[FR Doc. 03–5869 Filed 3–11–03; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Notice of Availability of Model Application Concerning Technical Specification Improvement To Extend Accumulator Completion Times for Westinghouse Plants Using the Consolidated Line Item Improvement Process

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of availability.

SUMMARY: Notice is hereby given that the staff of the Nuclear Regulatory Commission (NRC) has prepared a model application for changing the completion time from 1 hour to 24 hours for Condition B of Technical Specification (TS) 3.5.1.

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

(Revised) March 25, 2003

AGENDA
140th ACNW MEETING
MARCH 25-27, 2003

TUESDAY, MARCH 25, 2003, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

1) 10:00 - ~~10:10~~ 10:05 A.M. Opening Statement (Open) (BJG/NMC/MPL)
The Chairman will open the meeting and turn it over to the Working Group chairman who will state the Workshop objectives and provide a session overview.

WORKING GROUP ON NRC AND DOE PERFORMANCE ASSESSMENTS: ASSUMPTIONS AND DIFFERENCES (Open)

The theme of the working group will be how to achieve appropriately credible and realistic performance assessment models. While the total scope of the performance assessments will be discussed, realism of the source term work will be emphasized because it is a key driver in the performance of the proposed repository.

2) ~~10:10~~ - 10:50 A.M. 10:20 Keynote Presentation: Realism in Simulating Long-Term Waste Package Corrosion and Source Term

2.1) Views on the development of a realistic source term will be presented by a distinguished expert. **Joe Payer, Case Western Reserve Univ.**

10:50 - ~~11:10~~ 11:15 A.M. 2.2) Discussion

3) ~~11:10~~ - 11:35 A.M. 11:15 Introduction to DOE's Total System Performance Assessment (TSPA) Model

11:10 - 11:25 A.M. Presentation by **Abe van Luik** from DOE
11:25 - 11:35 A.M. Discussion

4) 11:35 - ~~12:00~~ Noon — Introduction to NRC's Total-System Performance Assessment (TPA)

11:35 - 11:50	Presentation by **Andy Campbell** from NRC's Office of Nuclear Material Safety and Safeguards (NMSS)/Division of Waste Management (DWM)
11:50 - Noon	Discussion

~~12:00~~ - 1:00 P.M. — ***LUNCH***

5) 1:00 - ~~2:45~~ P.M. — Overview of TSPA and TPA: Assumptions and Differences in Approach, focusing on

- Infiltration/tunnel dripping
- Source Term
- Near Field
- Unsaturated Zone
- Saturated Zone
- Biosphere and dose

1:00 - 1:30 P.M.	Presentation by **Peter Swift** from Sandia/BSC/DOE
1:30 - 1:50 P.M.	Discussion
1:50 - 2:20 P.M.	Presentation by **Chris Grossman** from NRC's NMSS/DWM
2:20 - 2:45 P.M.	Discussion

~~2:45~~ - 3:00 P.M. — ***BREAK***

6) 3:00 - 5:00 P.M. — Source Term Module

3:00 - 3:30 P.M.	TSPA presentation by **Robert Andrews** from DOE
3:30 - 4:00 P.M.	Discussion
4:00 - 4:30 P.M.	TPA Presentation by **David Esh** from NRC's NMSS/DWM
4:30 - 5:00 P.M.	Discussion

7) 5:00 - 5:30 P.M. — Public Comments

WEDNESDAY, MARCH 26, 2003, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

WORKING GROUP ON NRC AND DOE PERFORMANCE ASSESSMENTS: ASSUMPTIONS AND DIFFERENCES (Open) (CONTINUED)

8) 8:30 - 8:35 A.M.

Opening Statement (GMH/NMC/HJL)
The Chairman will make opening remarks regarding the conduct of today's sessions.

9) ~~8:35~~ - 10:35 A.M.

Simplified models of key contributors to dose traced through various modules; e.g.,

- Infiltration/tunnel dripping
- Source Term
- Near Field
- Unsaturated Zone
- Saturated Zone
- Biosphere and dose

~~8:35~~ - 9:05 Presentation by **Peter Swift** from Sandia/BSC/DOE on the key contributors as traced through various modules in TSPA
9:05 - 9:35 Discussion
9:35 - 10:05 Presentation by **Tim McCartin** from NRC's NMSS/DWM on the key contributors as traced through various modules in TPA
10:05 - 10:35 Discussion

10:35 - 10:50 A.M. ***** BREAK *****

10) 10:50 - 12:45 P.M.

Presentations by representatives of the State of Nevada, Counties, Las Vegas Paiutes, and Electric Power Research Institute

Don Shettel Geosciences Management Institute, Inc. (representing state of Nevada)
John Walton, Univ. of Texas at El Paso (representing Nye Co.)
Englebrecht von Tiesenhausen (representing Clark Co.)
Atef Elzeftawy (representing Las Vegas Paiute tribe)
John Kessler (representing EPRI)
Inyo County was invited but didn't send a speaker. They will present at a future ACNW meeting.

APPENDIX C: MEETING ATTENDEES

140TH ACNW MEETING
MARCH 25–27, 2003

ACNW STAFF

Sher Bahadur
Neil Coleman
Michele Kelton
Timothy Kobetz
John Larkins
Howard Larson
Michael Lee
Richard Major
Richard Savio

ACRS STAFF

Ramin Asa

Invited Experts

Rodney Ewing, University of Michigan
Joe Payer, Case Western Reserve University
Ronald Latanison, U.S. Nuclear Waste Technical Review Board (NWTRB)
Daniel Bullen, U.S. Nuclear Waste Technical Review Board
Maury Morgenstein, Geosciences Management Institute, Inc.
Don Shettel, Geosciences Management Institute, Inc.

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION

MARCH 25, 2003

Boby Eid	NMSS
Robert Johnson	NMSS
Jeffrey Pohle	NMSS
Phil Reed	RES
John Bradbury	NMSS
Dave Esh	NMSS
Janet Kotra	NMSS
Jim Darma	NMSS
Anne Passarelli	NMSS
Baka Ibrahim	NMSS
Andy Campbell	NMSS
Tae Ahn	NMSS
Bill Dam	NMSS

APPENDIX C
140th ACNW MEETING
MARCH 25-27, 2003

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION (CONT'D)

MARCH 25, 2003 (Cont'd)

John Randall	RES
Philip Justus	NMSS
Mysore Nataraja	NMSS
Yong Kim	NMSS
Kien Chang	NMSS
Banad Jagannath	NMSS
Larry Campbell	NMSS
King Stablein	NMSS
James Firth	NMSS
Elaine Brummett	NMSS
Jon Peckenpaugh	NMSS
Tim McCartin	NMSS
Bret Leslie	NMSS
Michael Layton	OCM/GJD
Tamara Bloomer	NMSS
Latif Hamdan	NMSS
Cindy Lin	NMSS
Adam Schwartzman	NMSS
Chris Grossman	NMSS
Cynthia Jones	OCM/GJD
Aladar Csontos	NMSS

MARCH 26, 2003

Tae Ahn	NMSS
Tim McCartin	NMSS
Phil Justus	NMSS
James Firth	NMSS
Boby Eid	NMSS
Kien Chang	NMSS
Baka Ibrahim	NMSS
John Bradbury	NMSS
Chris Grossman	NMSS
Adam Schwartzman	NMSS
Banad Jagannath	NMSS
Mysore Nataraja	NMSS
Janet Kotra	NMSS
David Brooks	NMSS

APPENDIX C
140TH ACNW MEETING
MARCH 25–27, 2003

ATTENDEES FROM THE NUCLEAR REGULATORY COMMISSION (CONT'D)

MARCH 26, 2003 (Cont'd)

Richard Cole	ASLBP
Charles Kelber	ASLBP
John Randall	RES
Mitzi Young	OGC
Dennis Galvin	NMSS
Yong Kim	NMSS
Andy Campbell	NMSS

MARCH 27, 2003

Philip Justus	NMSS
Eric Pogue	NMSS
Kristina Banovac	NMSS
Sam Nalluswami	NMSS
Mark Thaggard	NMSS
Amir Kouhestani	NMSS
Richard Cole	ASLBP
Chris McKenney	NMSS
Claudia Craig	NMSS
Dan Gillen	NMSS

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

MARCH 25, 2003

Hugh Thompson	Tallisman International
E. v. Tiesenhausen	CCCP
Norm Henderson	Bechtel SAIC Company
Atef ElZeftawy	Las Vegas Painte Tribe
Lane Howard	Center for Nuclear Waste Regulatory Analyses (CNWRA)
Igor Chickkov	CNWRA
John Walton	Nye County, Nevada
Doug Duncan	U.S. Geological Survey
Oleg Povet--	CNWRA
Mark Wisenburg	Bechtel SAIC
Robert Bernero	Self
Stan Echols	ECG
W. Mark Nutt	Golder Associates, Inc.

APPENDIX C
140TH ACNW MEETING
MARCH 25–27, 2003

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC (CONT'D)

MARCH 25, 2003 (Cont'd)

Rod McCullum	NEI
George Hellstrom	DOE
Judy Treichel	Nevada Nuclear Waste Task Force
John Starmer	PML Environmental
Jim Sheffner	MTS-East
Patrick LaPlante	CNWRA
Dane Diodato	NWTRB
Steve Frishman	State of Nevada
Michael O'Mealia	Nevada
Leon Reiter	NWTRB
John Austin	Link Technologies
Ken Czyscinski	EPA
Roland Benke	CNWRA
Gordon Wittmeyer	CNWRA
Peter Swift	BSC/SAIC
Nick DiNunzio	DOE
Wesley Patrick	CNWRA
Osvaldo Pensado	CNWRA
Antoine Claisse	CNWRA
Cynthia Dinwiddie	CNWRA
Robert Pabalan	CNWRA
Gustavo Cragnolino	CNWRA
Ron Janetzke	CNWRA
Paul Bertetti	CNWRA
English Pearcy	CNWRA
Sitakanta Mohanty	CNWRA
Scott Painter	CNWRA
Gertrude Ofoegh--	CNWRA
Michael Smith	CNWRA
Vijay Jain	CNWRA
Yiming Pan	CNWRA
Carol Hanlon	DOE
Abe van Luik	DOE
Susan Lynch	State of Nevada
John Kessler	EPRI

APPENDIX C
140TH ACNW MEETING
MARCH 25–27, 2003

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC (CONT'D)

MARCH 26, 2003

Norman Henderson	Bechtel SAIC Co.
E. v. Tiesenhausen	CCCP
fWesley Patrick	CNWRA
Jim Sheffner	MTS-East
Carol Hanlon	DOE
John Starmer	PML Environmental
April Pulvirenti	Catholic University
Dane Diodato	NWTRB
G. Stirewalt	MARDEX
Aaron Barkatt	Catholic University
Tung Tseng	TECRO
Jim Yoiek	Bechtel SAIC Co.
Bob Andrews	Bechtel SAIC Co.
Patrick LaPlante	CNWRA
James Duguid	Bechtel SAIC Co.
Roger Staehle	State of Nevada
Susan Lynch	State of Nevada
Abe van Luik	DOE
Igor Chickkov	CNWRA
Roland Benke	CNWRA
Dan Metlay	NWTRB
Oler Povero	CNWRA
Osvaldo Pensado	CNWRA
Antoine Claisse	CNWRA
Cynthia Dinwiddie	CNWRA
Robert Rabalan	CNWRA
English Pearcy	CNWRA
Paul Bertetti	CNWRA
David Turner	CNWRA
Michael Smith	CNWRA
Sitakanta Mohanty	CNWRA

MARCH 27, 2003

Carol Hanlon	DOE
E. v. Tiesenhausen	CCCP

APPENDIX D: FUTURE AGENDA

The Committee approved the following topics for discussion during its 141st meeting, scheduled for April 22–23, 2002:

- One Step at a Time: The Staged Development of Geologic Repositories for High-Level Radioactive Waste
- Transportation Working Group Follow-on
  - i. National Academy of Sciences Transportation Study
  - ii. State of Nevada Technical Concerns With the Transportation of Spent Fuel and High-Level Waste
  - iii. Full-Scale Testing Issues, Including an Assessment of NUREG-1768
- Update on NRC Division of Waste Management Activities
- Self-Assessment Survey Results
- ACNW Action Plan
- 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

AGENDA ITEM NO. | **DOCUMENTS**

2 thru 15 — **Working Group on NRC and DOE Performance Assessments: Assumptions and Differences**

1. Realism in Simulating Long-Term Waste Package Corrosion and Radionuclide Source Term, presented by Joe H. Payer, Case Western Reserve University **[Viewgraphs]**

2. Total System Performance Assessment for the License Application—Credibility and Realism Issues, presented by Abraham E. Van Luik **[Viewgraphs]**

3. Background and Role of NRC's Total-System Performance Assessment Capability, presented by Andrew C. Campbell, NMSS **[Viewgraphs]**

4. Overview of the U.S. Department of Energy Total System Performance Assessment Model, presented by Peter Swift, Bechtel SAIC Co. **[Viewgraphs]**

5. Total-system Performance Assessment (TPA): Approaches and Assumptions for Version 4.1, presented by Christopher J. Grossman, NMSS **[Viewgraphs]**

6. Elements of the U.S. Department of Energy Source Term Model for Total System Performance Assessment, presented by Robert W. Andrews, Bechtel SAIC Co. **[Viewgraphs]**

7. Source-Term Modeling and Support, presented by David W. Esh, NMSS **[Viewgraphs]**

8. Component Performance and Key Contributors to Nominal Scenario Class Dose in the U.S. Department of Energy Total System Performance Assessment, presented by Peter Swift, Bechtel SAIC Co. **[Viewgraphs]**

9. Understanding Performance Assessment Results, presented by Tim McCartin, NMSS **[Viewgraphs]**

10. Near-Field Environments and Corrosion, presented by Don L. Shettel, Geosciences Management Institute, Inc. **[Viewgraphs]**

MEETING HANDOUTS

AGENDA ITEM NO.	DOCUMENTS
2 thru 15 (cont'd)	**Working Group on NRC and DOE Performance Assessments: Assumptions and Differences**

11. Evaporation, Reconstitution, and Water Chemistry, presented by John Walton and Drew Hall, for Nye County Department of Natural Resources and Federal Facilities

12. Clark County Comments, presented by Englebrecht von Tiesenhausen **[Viewgraphs]**

13. Tribal Concerns, presented by Atef ElZeftawy **[Handout]**

14. When Realism Is and Is Not Needed in TSPAs, presented by John Kessler, Electric Power Research Institute, Inc. **[Viewgraphs]**

15. CP of Alloy 22 in $CaCl_2$ Brines (No Nitrate), presented by Ronald Latanision, Nuclear Waste Technical Review Board **[Viewgraphs]**

16. Susceptible Zone for Localized Corrosion, presented by Joe H. Payer, Case Western Reserve University **[Viewgraphs]**

17. Risk Measures for Performance Assessment of Nuclear Waste Repositories presented by B. John Garrick, ACNW **[Viewgraphs]**

18. Biographical Material for Panelists and Stakeholder Presenters at ACNW's 140th Meeting, March 25-27, 2003

18 **Discussion of Self-Assessment Survey Preliminary Results**

19. (a) Proposed Future ACNW Activities
    (b) Proposed Commission Letter
    (c) June 27, 2002, letter re FY 2002 and FY 2003 Action Plan for the ACNW, provided by Mike Lee, ACNW **[Agenda Item 18, Handout #1]**

20. ACNW Self-Assessment—Status Report, provided by Richard Savio, ACNW

MEETING NOTEBOOK CONTENTS

TAB NUMBER **DOCUMENTS**

Opening Statement by ACNW Chairman

1. Revised Agenda,140th ACNW Meeting, March 25–27, 2003, dated March 25, 2003
2. Introductory Statement by ACNW Chairman, Tuesday, March 25, 3004, undated
3. Items of Interest for 139th ACNW Meeting
4. Introductory Statement by ACNW Chairman, Wednesday, March 26, 2003, undated
5. Introductory Statement by ACNW Chairman, Thursday, March 27, 2003, undated

2-15 **Working Group On NRC and DOE Performance Assessment: Assumptions and Differences**

6. Status Report
7. NRC TPA Peer Review
8. DOE TSPA Peer Review
9. TPA Waste Package and Source Term
10. • Panelist and Speaker Biographies
    - Ronald M. Latanision, Ph.D., NWTRB
    - Daniel B. Bullen, Ph.D., NWTRB
    - Rodney C. Ewing, University of Michigan
    - Maury E. Morgenstein, Ph.D., Geosciences Management Institute, Inc.
    - Don L. Shettel, Ph.D., Geosciences Management Institute, Inc
    - Letter dated 12/6/02, from George M. Hornberger, ACNW, to The Honorable Richard A. Meserve, NRC, Subject: Capabilities of Engineered and Natural Barriers
    - Letter dated 8/7/02, from George M. Hornberger, ACNW, to The Honorable Richard A. Meserve, NRC, Subject: High-Level Waste Performance Assessment Sensitivity Studies
    - Letter dated 9/18/02, from William D. Travers, NRC, to George M. Hornberger, ACNW, Subject: Response to the Advisory Committee on Nuclear Waste Letter Dated August 7, 2002, on the High Level Waste Performance Assessment Sensitivity Studies
    - Letter dated 8/5/02, from George M. Hornberger, ACNW, to The Honorable Richard A. Meserve, NRC, Subject: Performance of Waste Packages at the Proposed Yucca Mountain Repository

MEETING NOTEBOOK CONTENTS

TAB NUMBER	DOCUMENTS
2-15 (cont'd)	**Working Group On NRC and DOE Performance Assessment: Assumptions and Differences**

10. Background Material (Cont'd)

- Letter dated 9/17/02, from William D. Travers, NRC, to George M. Hornberger, ACNW, Subject: Response to the Advisory Committee on Nuclear Waste Letter Dated August 5, 2002, on the High-Level Waste Program Performance of Waste Packages at the Proposed Yucca Mountain Repository
- Letter dated 1/7/02, from George M. Hornberger, ACNW, to The Honorable Richard A. Meserve, NRC, Subject: Total System Performance Assessment and Conservatism
- Letter dated 2/7/2001, from B. John Garrick, ACNW, to The Honorable Richard A. Meserve, NRC, Subject: Comments on Improvement in NRC Staff's Capability in Performance Assessment
- Letter dated 12/6/2000, from B. John Garrick, ACNW, to The Honorable Richard A. Meserve, NRC, Subject: Alloy C-22 Corrosion Studies
- Proceedings From an International Workshop on Long-Term Extrapolation of Passive Behavior, July 19-20, 2001, Arlington, VA, Alberto A. Sagüés and Carlos A. W. Di Bella, Eds., United States Nuclear Waste Technical Review Board
- U.S. Nuclear Waste Technical Review Board, Report to The U.S. Congress and The Secretary of Energy, January 1, 2001, to January 31, 2002
- Evaluation of the Proposed High-Level Radioactive Waste Repository at Yucca Mountain Using Total System Performance Assessment, Phase 6, Final Report, February 2002, EPRI Project Manager, J. Kessler
- Elements of 10 CFR Part 63, Excerpts

17	**MOU Between the EPA and the NRC: Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites, Dated October 9, 2002**

11. Status Report
12. MOU Between the EPA and NRC, dated October 9, 2002
13. "Appropriations Panel Instructs NRC, EPA to Continued Talks on Cleanup," *Inside NRC*, October 21, 2002

MEETING NOTEBOOK CONTENTS

TAB NUMBER	DOCUMENTS
17 (cont'd)	**MOU Between the EPA and the NRC: Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites, Dated October 9, 2002**
	14. Memorandum dated 10/9/02, from Michael B. Cook, EPA, to EPA Addressees, Subject: Distribution of Memorandum of Understanding Between EPA and the Nuclear Regulatory Commission
	15. Viewgraphs by John T. Greeves, NMSS, 11/5/02, "Memorandum of Understanding Between EPA and NRC"
	16. Viewgraphs by John T. Greeves, NMSS, 11/5/02, "Next Steps and Guidance"
	17. Viewgraphs by Bruce Means, EPA, 11/5/02, "2002 MOU Between NRC and EPA"
18	**ACNW Self-Assessment**
	18. Status Report
19	19. Addendum - TSPA Supplemental Analyses of Waste Package & Biosphere