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MINUTES OF THE 55TH ACNW MEETING  
JULY 20-22, 1993

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Issued: August 25, 1993

MINUTES OF THE 55TH MEETING OF THE  
ADVISORY COMMITTEE ON NUCLEAR WASTE  
JULY 20-22, 1993  
BETHESDA, MARYLAND

The 55th meeting of the Advisory Committee on Nuclear Waste was held Wednesday and Thursday, July 20-22, 1993, in the Conference Room, 7920 Norfolk Avenue, Bethesda, Maryland. The purpose of this meeting was to discuss and take appropriate actions on the items listed in the attached agenda.

A transcript of selected portions of the meeting was kept and is available in the NRC Public Document Room at the Gelman Building, 2120 L Street, N.W., Washington, D.C. [Copies of the transcript taken at this meeting may be purchased from Ann Riley & Associates, Ltd., 1612 K Street, N.W., Washington, D.C. 20006.]

Dr. Dade W. Moeller, Committee Chairman, convened the meeting at 1:00 p.m. and briefly reviewed the schedule for the meeting. He stated that the meeting was being conducted in conformance with the Federal Advisory Committee Act. He stated that the Committee had received neither written comments nor requests from members of the public for time to make oral statements. However, he invited members of the public, who were present and had something to contribute, to let the ACNW staff know so that time could be allocated for them to make oral statements.

ACNW members, Drs. William J. Hinze, Paul W. Pomeroy, and Martin J. Steindler, were present. [For a list of attendees, see Appendix III.]

I. CHAIRMAN'S REPORT (Open)

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

Dr. Moeller identified a number of items that he believed to be of interest to the Committee, including:

- Dr. J. Ernest Wilkins, Jr., is now serving as Chairman of the Advisory Committee on Reactor Safeguards and Mr. James C. Carroll is the Vice-Chairman.
- Mr. Daniel Reicher has been named Deputy Assistant Secretary of Energy for the Office of Environmental Restoration and Waste Management.
- The NRC and the U.S. Department of Energy (DOE) have revised their "Procedural Agreement" for identifying guiding principles for interface during geologic site investigation

and site characterization phase of the high-level radioactive waste (HLW) management program.

- The DOE has signed an agreement with the Nuclear Fuel Development Corporation of Japan for research on radionuclide migration from radioactive waste repositories.
- The Lawrence Livermore National Laboratory issued its latest status report (April 1993) on the Yucca Mountain Project.
- The initial meeting of the National Academy of Sciences (NAS) Committee on the Technical Bases for a Yucca Mountain Standard was held in Las Vegas, Nevada, on May 27-29, 1993. Dr. Moeller noted that he has been asked to appear before this Committee during a future meeting. Before accepting, he wanted to know whether there may be a conflict of interest. Dr. Larkins observed that it would not likely be a conflict of interest, however, it would be well to know the subject to be discussed before a final determination could be made.
- The Supreme Court issued on June 28, 1993, its ruling on the use of expert judgment in scientific testimony. In essence, the Court decided to give judges more latitude, in effect asking them to think like scientists in deciding which experts will be allowed to testify before a jury and what they may discuss. Dr. Pomeroy requested that Mr. Martin Malsch, Office of the General Counsel (OGC), be asked to advise the Committee on how this ruling may affect the licensing process for the HLW geologic repository.
- The U.S. Environmental Protection Agency (EPA) had until June 15, 1993, to propose standards for the treatment of hazardous wastes under the Resources Conservation and Recovery Act (RCRA). It is anticipated that these standards will affect the management of mixed wastes. Dr. Moeller recommended that the Committee be briefed on the standards for treating mixed wastes. No action was taken by the Committee.
- The NRC staff has announced its intention to prepare a Generic Environmental Impact Statement for rulemaking in the development of criteria for decommissioning of NRC licensed facilities. (Federal Register Notice, Volume 58, No. 116, June 18, 1993).
- The NRC has issued a notice, dated June 29, 1993, inviting the public to submit nominations for members on the ACNW.

## II. HIGH-LEVEL WASTE MANAGEMENT QUALITY ASSURANCE (Open)

[Note: Mr. Giorgio Gnugnoli was the Designated Federal Official for this portion of the meeting.]

The NRC Office of Nuclear Materials Safety and Safeguards (NMSS) staff in the Division of High-Level Waste Management (HLWM) briefed the Committee on NRC and DOE progress made in the area of HLW management quality assurance (QA). Mr. Kenneth Hooks, HLWM, was the main presenter with clarifications provided by Mr. B. Joe Youngblood, Director, HLWM.

Mr. Hooks briefly discussed the regulatory pedigree of the QA requirements in the HLW program. He noted that the 10 CFR Part 60 QA requirements in Subpart G (§ 60.150-152) derived primarily from 10 CFR Part 50, Appendix B, which are the nuclear power plant QA requirements. Part 60 also indicates that stipulations can be imposed in addition to applicable portions of Appendix B; e.g., NQA-1, the NRC Review Plan and various other published guidance in NUREG reports. Mr. Hooks observed that most of the Appendix B requirements apply to the HLW program. He also remarked that the DOE and NRC are in a pre-licensing consultation phase and much of the NRC's authority is not yet binding on the DOE.

Aside from the QA considerations with respect to the DOE's HLW program activities, there is an internal QA (IQA) plan for the NRC staff's review of the DOE HLW activities and investigations, as well as of the Center for Nuclear Waste Regulatory Analyses (CNWRA) activities in research and technical assistance. He acknowledged that the QA standards to which the DOE is held are different from those applied to the NRC staff. The IQA auditing of the HLWM staff is accomplished internally by the HLWM staff. Should computer models and software products be used by the NRC staff in support of the licensing decision, then an Appendix B type audit would need to be completed on the use of those models and products, probably in concert with CNWRA personnel. The Committee members questioned this approach of keeping the NRC audits of its own QA activities internal.

Mr. Hooks briefly addressed DOE's own QA auditing activities. DOE research activities fall under internal DOE Orders for QA (5700.-6[c]), but the Office of Civilian Radioactive Waste Management (OCRWM) is exempt from this order, because OCRWM works under the Appendix B criteria. In certain cases, the NRC staff accompanies the DOE QA audit teams when there are audits of DOE HLW contractors. In these cases, the NRC team evaluates the contractor's program, as well as how the DOE QA audit team has conducted its audit. In general, the NRC holds the DOE to Appendix B and NQA-1 QA provisions. Any written DOE QA plan or procedure would have to comply with these provisions.

A discussion ensued regarding a perception that some scientific investigations were being adversely affected by the lack of accompanying QA procedures. The situation has been characterized as a misunderstanding among laboratory and field investigators. In effect, a clear scientific notebook recording procedure can be used, when there are no quantifiable QA procedures.

Some other observations and comments made during this presentation included:

- DOE uses a graded level of QA controls (i.e., whether an activity is significant to waste isolation or safety).
- All activities were originally graded at level 1. The control priority is lowered only if experience and program interaction support such action.
- In the early part of the program, QA consumed an inordinate amount of effort and time. However, it has reach an equilibrium point of approximately 3% of the overall effort. (N.B. This does not include DOE subcontractors.)
- Various levels of DOE QA auditing are used:
  1. Audit: A formal review of the controls and adherence to existing procedures. This is usually the case for completed efforts, where the "product," and the process going into its development, can be evaluated as well.
  2. Surveillance: Less formal and may only involve one DOE "auditor." This usually involves an in-process activity.
  3. Observation: A dual purpose activity, whereby the audit team, as well as the organization being audited, is evaluated.

The NRC staff uses this observation approach because of the economy of resources. In effect, the NRC accompanies the DOE Quality Assurance Division (QAD) on its review of DOE and DOE contractor program elements.

- Due to a change in the DOE's management and operating (M&O) contractor, the M&O is still struggling to come to terms with the QA requirements in the OCRWM program. All other contractors have acceptable QA programs.
- The QA audits are selective and do not cover 100% of the program activities at all times. However, the DOE does perform technical reviews and evaluations at the working

level across the board. These reviews are performed outside the QA program.

- The QA programs (both NRC and DOE) do not prevent mistakes. They provide an organized way of identifying them.
- The HLWM division concentrates its QA efforts on site characterization activities; other parts of NRC -- Division of Industrial and Medical Nuclear Safety -- review DOE activities in other areas such as transportation and container-related QA aspects. Regulations in 10 CFR Parts 71 and 72 apply in those cases.
- One of the areas where the overall DOE QA program was not considered to be adequate was in software QA.
- When asked about recurring problems in QA, the HLWM staff indicated that field engineers showed reluctance to accept QA procedures and that these procedures need to be followed. Specifically, cavalier attitudes toward the importance of hold points could be a problem in the future. DOE is conducting trend analyses to determine whether identified recurring problems are on the decline.
- There is still some uncertainty with regard to the NRC contractors, besides the CNWRA, and the consistency of their QA programs -- specifically in the area of data qualification.
- More training is needed for improved implementation of QA; it is not sufficient to issue QA directives and expect investigators to understand, accept and implement them in the site characterization work.

Mr. Youngblood indicated that the briefing was for information purposes only. No ACNW letter was deemed necessary. No Committee action was taken at this meeting as a result of this briefing.

### III. DECOMMISSIONING AND DECONTAMINATION ACTIVITIES (Open)

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

Mr. Larry Pittiglio, NMSS, introduced the NMSS and NRR staff in attendance at the meeting who participated in the considerations associated with the decommissioning of the Fort St. Vrain (FSV) and Shoreham Nuclear Power Plants. He also introduced the representatives from the licensees.

Fort St. Vrain

After noting in his brief remarks both the key milestone decommissioning activities and the dates for licensing actions associated with the issuance of the decommissioning order (November 1992), Mr. Pittiglio stressed the timespan from issuance of the decommissioning plan by Public Service of Colorado (PSC) to the issuance by the NRC of the decommissioning order. This three-year period involved frequent contacts between the staff and the licensee, as both groups sought to accomplish this major effort. He introduced Mr. Clegg Crawford, Vice President, PSC, who provided an informative update on activities to-date at FSV, as well as future plans.

Mr. Crawford noted that the targeted objective of PSC for the decommissioning effort is to have a site that permits unrestricted use. Such would be consistent with the stated possibility that the site could be repowered in the future with a non-nuclear electric generating power plant. He indicated that continued operation of the nuclear power plant was not economic and the decision to shut it down was therefore made.

Although the facility only operated the equivalent of 890 effective full power days during its 15 year lifetime, Mr. Crawford believes the gas-cooled reactor concept had considerable merit, particularly insofar as low exposure of personnel to radiation. He indicated regret that further development of the concept did not appear to have much interest in the United States.

The principal contributor to facility downtime (26%) was water in the core, a problem he believed could be overcome once diligently addressed. He also discussed the economics associated with various decommissioning options, stating that prompt decontamination was the only one that appeared to be somewhat predictable and relatively justifiable from an overall cost perspective.

In response to a question, he stated that the creation of mixed waste is strenuously avoided. Thus far only two drums had been generated.

Responding to another question, he stated his belief that the biggest lesson to be learned from their experience was the need for excellent communication between the regulator and the regulated -- a condition that he considered to be outstanding in the FSV decommissioning effort.

After noting their present decommissioning concerns (low-level radioactive waste disposal site availability and cost, final NRC site release criteria, unknowns yet to be faced, eventual disposition of spent fuel in the HLW repository, and lack of a mixed waste disposal facility) the representatives of PSC presented a seven-

minute video showing the cutting and segmentation of the pre-stressed concrete reactor vessel head.

Dr. Steindler asked if monitoring for carbon-14 was being performed. He noted that such measurement was not straightforward. In response, Mr. Pittiglio stated that, while he believed such monitoring was being conducted, he would obtain a definitive answer for the Committee.

Mr. Paul Michaud, former Region IV resident inspector at the facility, observed that the principal problem he noted in the transition from an operating facility to one undergoing decommissioning, was that activities were now being performed by a construction contractor whose safety mentality was not the same as that of the facility operating staff. That mentality, he believed, contributed directly to the three crane incidents (two of which were overloads). He noted that the radiation safety program at FSV was excellent. He expects that in the future, more utilities than is the current belief, will opt for the decontamination option.

#### Shoreham Nuclear Power Plant

Mr. Pittiglio introduced Mr. Stephen Schoenwiesner, Long Island Power Authority (LIPA) licensing manager, who reviewed the unique and salient issues associated with the decommissioning of the Shoreham Nuclear Power Plant. He noted that this BWR, although licensed for full power in April 1989, had never ascended above 5% due largely to New York State political considerations.

Since the nuclear power plant only operated at low power briefly prior to shutdown, only 13 systems were contaminated (with a total of only 3 mCi), with no contamination external to the plant buildings. Plant systems were decommissioned largely through dismantlement and shipment for burial/volume reduction. It is believed that essentially 90% of the low-level radioactive waste (LLW) has been removed from the site and 90% of the equipment (by weight), including all reactor internals, has been removed.

The fuel, which is slightly irradiated, has been sold to the Philadelphia Electric Company for use in its Limerick station. (Overseas reprocessing of the fuel, as well as on-site storage, had been considered earlier.) Although there is no licensing impediment to such a transfer, restrictions imposed by New York City have made the transportation of the fuel between the two facilities difficult. Current plans are to use the IF-300 cask. This would result in 33 shipments, of 17 fuel bundles each, to be made in a 12-14 month period.

LIPA projects that the cost for the decommissioning will be approximately \$170 million (under budget) and will be completed



within the scheduled 27 months. (This assumes that the fuel can be disposed of within the scheduling "window.") It was noted that extensive post-cleanup surveys were conducted and that these resulted in more than 100,000 data points.

In response to questioning, it was stated that essentially no mixed waste had been generated thus far. Also, although the Southeast Compact had not been pleased with the New York State LLW disposal siting effort, Barnwell was still accepting Shoreham LLW.

In addition to reiterating most of the regulatory-related concerns voiced earlier by the PSC representative, LIPA stressed the need for a clearer definition of a "possession only" license and the need for a final resolution of generic decommissioning release criteria.

After thanking all participants for their presentations, Dr. Moeller stated that the Committee, after a short recess, would reconvene in executive session.

This briefing was for information only. No Committee action was taken at this meeting as a result of this briefing.

**IV. MEETING WITH COMMISSIONER ROGERS AND DE PLANQUE (Closed)**

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

This session was held on July 21, 1993, from 1:00 p.m. to 2:30 p.m., in the Commissioners Conference Room, 18th Floor, OWFN. This portion of the meeting was closed to public attendance pursuant to 5 U.S.C. 552b(c)(2) to discuss matters that relate solely to internal personnel rules and practices of this Advisory Committee and pursuant to 5 U.S.C. 552b(c)(6), to discuss information of a personal nature the release of which would constitute a clearly unwarranted invasion of personal privacy.

**V. MEETING WITH COMMISSIONER REMICK (Closed)**

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

This session was held on July 21, 1993, from 2:30 to 3:30 p.m. in the Commissioner's Office, OWFN. This portion of the meeting was closed to public attendance pursuant to 5 U.S.C. 552b(c)(2) to discuss matters that relate solely to internal personnel rules and practices of this Advisory Committee and pursuant to 5 U.S.C. 552b(c)(6), to discuss information of a personal nature the release of which would constitute a clearly unwarranted invasion of personal privacy.

VI. REPORT ON ACNW VISIT TO CANADIAN WHITESHELL NUCLEAR LABORATORY  
AND THE UNDERGROUND RESEARCH LABORATORY (Open)

[Note: Mr. Giorgio Gnugnoli was the Designated Federal Official for this portion of the meeting.]

The ACNW party visiting the Canadian Whiteshell Nuclear Laboratory and Underground Research Laboratory (URL) consisted of:

Dr. Martin J. Steindler, ACNW Vice Chairman  
Dr. William J. Hinze, ACNW Member  
Mr. Howard J. Larson, Senior Staff Engineer  
Mr. Giorgio N. Gnugnoli, Staff Scientist

The visitors were welcomed to the Atomic Energy of Canada, Ltd. (AECL) by Dr. Robert Dixon, Manager for Government Affairs. The visitors were briefed by several AECL personnel, including Dr. Keith Nutthall, Director of Environmental Technologies. A number of topics were covered, such as the background and history of both the Whiteshell and URL facilities. The recurrent topic with the presenters was the Environmental Impact Analysis being performed to evaluate the concept of disposal of used nuclear fuel in a geologic repository to be located in the Canadian Shield formation. The URL is not a candidate site; it is a study facility. All of the work, the investigations and the environmental impact statement are focused on the concept of deep geological disposal. The goal is to minimize the burden to future generations with regard to the possible harm posed by nuclear waste.

Dr. Steindler provided a brief presentation to the AECL personnel on the roles of the various federal and state agencies, as well as the role of the ACNW in the HLW management and disposal program in the United States. The visitors observed ongoing experiments in the excavated research facility (URL), which extends approximately half a kilometer into the plutonic rock of the Canadian Shield. Ongoing experiments involved induced decay heat tests, stress propagation investigation and several hydrology/ moisture transport experiments. It was noteworthy that the AECL has cooperated with a number of foreign enterprises in combined investigations; the Japanese, Swedes and the French have conducted joint experiments using the URL facility. The level of cooperation was impressive; even the DOE had some in situ experiments performed by the URL.

During the meeting, Dr. Moeller inquired as to the AECL's QA program. The AECL operates a QA program that is equivalent to NQA-1. It was pointed out that this QA effort was, in large part, in response to the DOE's need to ensure that the DOE's experimental data had that level of qualification. The levels of control are graded in a fashion similar to that used by DOE; e.g., for those activities important to the environmental assessment, there was a

stringent level of control, and for those activities where routine laboratory protocols applied, technical investigators could take a more relaxed approach such as maintaining a laboratory notebook. The AECL takes a rational and logical approach to application of QA, as opposed to rigid adherence to procedures without a rational basis. Dr. Hinze remarked that the AECL practices QA in a truer fashion; they concentrate on the quality of the analysis, not only on whether protocols were properly followed. He cited the peer review process and the aggressive publication of the Canadian strategy, data and analysis as commendable. Other highlights of the visit included:

- The Field Irradiator Gamma (FIG) test where a cesium source was placed in a tower to study the impacts of high radiation doses on the surrounding environment, as well as its recovery after closure.
- The large block radionuclide migration facility where studies of the migration of radionuclides in granite are being conducted by taking 0.6 m<sup>3</sup> blocks of granite with a natural fracture and monitoring radionuclide movement under equilibrated pressure and moisture conditions. Both sorption and flow rates are measured.
- The AECL conducts a frugal program both in terms of resources and in capital outlay. Annual costs run 30 to 50 million dollars, yet there is a small, long-standing, high-morale, well-focused staff that is aggressively inquisitive in its research efforts.
- The AECL has a directed public involvement program that relies on such things as natural analogues to educate and inform the public with regard to the feasibility of the geologic disposal strategy.
- Drs. Hinze and Steindler stressed that the AECL was doing fundamental research in areas of grouting, geochemistry, colloidal transport, container performance, etc. in a representative setting of applicable conditions (e.g., use of ground water from the Canadian Shield itself).
- The AECL is very active in encouraging joint projects in experimentation with any interested organizations. The amount of 10-15 million dollars (Canadian) was mentioned as an estimate for joint experiments.

VII. REPORT ON DOE WORKSHOP ON MULTI-PURPOSE CANISTERS (Open)

[Note: Mr. Giorgio Gnugnoli was the Designated Federal Official for this portion of the meeting.]

Dr. Moeller discussed his participation in the DOE's Workshop on the multi-purpose canister (MPC) for storage, transportation and disposal of HLW. He discussed the unexpectedly large attendance, as well as the variety of attendees (e.g., Indian Tribes participating in the MRS program). He briefly summarized comments by DOE/OCRWM and State of Nevada representatives, as well as the format of the "breakout" subgroups. He stressed that this workshop was to focus only on raising and identifying issues related to the role of the MPC in the HLW program; it was not to try to resolve the issues or problems raised. The MPC subject area was divided into four specific categories and one generic category. Dr. Moeller highlighted the points brought up under these subtopics:

1. **Waste Storage.** It was acknowledged that one could not develop containers that would satisfy all possible fuel configurations. Satisfying 60-80% of the configurations would be adequate. The remaining fuel configurations would be dealt with on a case-by-case basis. Requirements for repository design should not delay development of dual purpose MPCs (e.g., for storage and transportation).
2. **Transportation.** Participants stressed cost effectiveness and the changing nature of transportation routes as factors to be considered in MPC design and flexibility.
3. **Repository/Disposal Considerations.** A more aggressive contracting strategy to develop canister materials is needed. (Issuance of RFPs, etc.). Some consideration needs to be given to public perception; e.g., extreme reliance on a canister's robustness for storage could be perceived as an implicit decision to rely on long-term storage and delay of any real disposal strategy.
4. **Technical Aspects of MPC Design.** Performance specifications of the waste package and MPC need to be established and published. Economic considerations need to be factored into any design. A number of participants recommended the planned use of contaminated scrap metal (slightly radioactive) in the container design.

The general category (called the "parking lot") included recommendations such as moving the MRS to the eastern region of the United States (for geographic balance and sharing of the impacts of the waste program), use of robotics in waste package handling, and learning from the experiences in the Waste Isolation Pilot Plant and nuclear navy programs. Summary Reports and a Conceptual Design Report will be issued in time for a follow-up workshop in October of this year.

This briefing was for information only. No Committee action was taken as a result of this briefing.

VIII. EXECUTIVE SESSION (Open/Closed)

[Note: Mr. Richard K. Major was the Designated Federal Official for this part of the meeting.]

A. Reconciliation of EDO Response to Recent ACNW Reports (Open)

The Committee compared the recommendations from recent ACNW reports with the EDO responses to determine whether significant issues have been closed. Dr. Larkins suggested that, after the meeting, the members review the reconciliation analysis prepared by Mr. Larson and provide him with comments, if appropriate.

B. Potential Candidates for Committee Membership (Closed)

Drs. Hinze and Pomeroy reported on their meeting with representatives of the National Academy of Sciences to solicit names of potential candidates for Committee membership. The Committee discussed the development of a list of qualified candidates, including obtaining their curriculum vitae. The Committee also discussed internal organizational and personnel matters with the ACNW Executive Director.

C. Future Committee Activities (Open)

- The Committee agreed to prepare and submit a "White Paper" to the Commissioners that discusses the identification of key topics, the bases for their selection, how the Committee plans to address them, the required resources needed, and procedures for interacting with outside agencies. The Committee further agreed to submit an early draft of this White Paper for review by Commissioners Rogers and de Planque who have been designated as primary liaison between the Committee and Commission.

- Since an improved communication mechanism will be established, the Committee expressed interest in discontinuing the submission of the quarterly program plan report to Chairman Selin.
- The Committee agreed that the members and the Executive Director should meet with the individual Commissioners more often, perhaps on a monthly or bimonthly basis. Dr. Pomeroy suggested that it may be of value to encourage the Commissioners' Technical Assistants to attend more Committee meetings.
- As one step in conserving resources, the Committee agreed not to review any DOE Study Plans for the Yucca Mountain Site Characterization Program, unless specifically requested.
- The Committee discussed the proposed meeting schedule for the 56th ACNW meeting on August 25-26, 1993, which is designed to review the future role and goals of the Committee. The members reconfirmed their interest in meeting, during this session, with Commissioners Rogers and de Planque, Mr. Robert Bernero, NMSS, Mr. Joe Youngblood, NMSS, Mr. Richard Bangart, NMSS, and possibly Dr. R. Budnitz.
- Several members reconfirmed their request for a tutorial conducted by the NRC staff (NMSS and RES) to examine the methodologies involved in calculating a complementary cumulative distribution function (CCDF). The ACNW staff will request a training session on or about October 1, 1993.
- The Committee reconfirmed its plan to hold the 58th ACNW meeting in Las Vegas, Nevada, on October 27-28, 1993. Current plans are to have a technical exchange with representatives of the DOE Yucca Mountain Project Office and a site visit to Yucca Mountain. In conjunction with this trip, a working group meeting will be held on October 26, 1993, in Las Vegas on Characterization of the Unsaturated Zone Flow and Transport Properties.
- The Committee discussed a DOE/NRC technical exchange meeting on the Engineered Barrier System to be held on August 24, 1993, in Bethesda, Maryland. The Committee requested that an ACNW staff person attend this meeting and report back to the Committee. Drs. Moeller, Pomeroy, and Steindler requested they be kept informed on the meeting details.

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D. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 56th ACNW Meeting, August 25-26, 1993, and future Working Group meetings.

The meeting was adjourned at 12:50 p.m., Thursday, July 22, 1993.

closed pursuant to 5 U.S.C. 552b(c)(2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS and matters the release of which would represent a clearly unwarranted invasion of personal privacy.

**Advanced Boiling Water Reactors,** October 26–27, 1993, Bethesda, MD. The Subcommittee will continue its review of the GE ABWR Standard Safety Analysis Report and the associated NRC staff's Final Safety Evaluation Report.

**Advanced Boiling Water Reactors,** November 16–17, 1993, Bethesda, MD. The Subcommittee will continue its review of the GE ABWR Standard Safety Analysis Report and the associated NRC staff's Final Safety Evaluation Report.

#### ACRS Full Committee Meetings

**399th ACRS Meeting,** July 8–10, 1993, Bethesda, MD. During this meeting, the Committee plans to consider the following:

**A. Draft Regulatory Guide, DG-1025, Calculational and Dosimetry methods for Determining Pressure Vessel Neutron Fluence—**Review and comment on a draft regulatory guide on the methodology for determining pressure vessel neutron fluence. Representatives of the NRC staff will participate.

**B. Draft Regulatory Guide, DG-1023, Evaluation of Reactor Pressure Vessels with Charpy Upper-Shelf Energy Less Than 50 ft-lb—**Review and comment on a draft regulatory guide on the evaluation of reactor pressure vessels with Charpy upper-shelf energy less than 50 ft-lb. Representatives of the NRC staff will participate.

**C. NRC Regulatory Review Group Report—**Review and comment on the report of the NRC Regulatory Review Group. Representatives of the NRC staff will participate.

**D. Plans for Completing the Review of the Advanced Boiling Water Reactor Standard Safety Analysis Report (SSAR)—**Discuss the schedule for completion of the ACRS review of the SSAR for the ABWR design. Representatives of the NRC staff will participate, as appropriate.

**E. Debris Plugging of Emergency Core Cooling Suction Line Strainers—**Hear a briefing by and hold discussions with representatives of the NRC staff on the potential for debris plugging of emergency core cooling suction line strainers. In addition, hear an update on the NRC staff activities to evaluate the need for actions by U.S. licensees to address this issue as a result of the lessons learned from the Barseback event in Sweden. Representatives of the industry will participate, as appropriate.

**F. Application of Probabilistic Risk Assessment Methods for Ranking Motor-Operated Valves (MOV)—**Hear a briefing by and hold discussions with representatives of the NRC staff on the preliminary results from a research program to prioritize the risk importance of MOVs. Representatives of the industry will participate, as appropriate.

**G. Organizational Behavior and Factors (Tentative)—**Hear a briefing by and hold discussions with Dr. Leamon, ACRS consultant, on the subject of organizational behavior and organizational factors. Representatives of the NRC staff will participate, as appropriate.

**H. Reactor Operating Experience—**Hear a briefing by and hold discussions with representatives of the NRC staff on a recent event at Sequoyah Nuclear Power Plant Unit 2 that involved a rupture of an extraction steam header line.

**I. Resolution of ACRS Comments and Recommendations—**Discuss responses from the NRC Executive Director for Operations to recent ACRS comments and recommendations.

**\*J. ACRS Subcommittee Activities—**Hear reports and hold discussions regarding the status of ACRS subcommittee activities, including a report of the Planning and Procedures Subcommittee involving matters related to the status of appointment of new members and organizational and personnel matters relating to ACRS staff members. A portion of this session may be closed to public attendance pursuant to 5 U.S.C. 552b(c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of this Committee and matters the release of which would represent a clearly unwarranted invasion of personal privacy.

**K. Future ACRS Activities—**Discuss topics proposed for consideration by the full Committee during future meetings.

**L. Miscellaneous—**Discuss miscellaneous matters related to the conduct of Committee activities and complete discussion of matters and specific issues that were not completed during previous meetings as time and availability of information permit.

**400th ACRS Meeting,** August 5–7, 1993, Bethesda, MD. Agenda to be announced.

**401st ACRS Meeting,** September 9–11, 1993, Bethesda, MD. Agenda to be announced.

**402nd ACRS Meeting,** October 7–9, 1993, Bethesda, MD. Agenda to be announced.

**403rd ACRS Meeting,** November 4–6, 1993, Bethesda, MD. Agenda to be announced.

**404th ACRS Meeting,** December 9–11, 1993, Bethesda, MD. Agenda to be announced.

#### ACNW Full Committee and Working Group Meetings

**55th ACNW Meeting,** July 21–22, 1993, Bethesda, MD. During this meeting, the Committee plans to consider the following:

**A. High Level Waste Management Quality Assurance—**Hear a briefing by and hold discussions with representatives of the NRC staff on the status of High Level Waste Management Quality Assurance.

**B. Canadian Whiteshell Nuclear Laboratory Report—**Hear a report by ACNW Members who visited the Canadian Whiteshell Nuclear Laboratory and the Underground Research Laboratory in Manitoba, Canada.

**C. Resolution of ACNW Comments and Recommendations—**Discuss responses from the NRC Executive Director for Operations to recent ACNW comments and recommendations.

**\*D. Committee Activities—**Discuss anticipated and proposed Committee activities, future meeting agenda, and organizational and personnel matters. A portion of this session may be closed to public attendance pursuant to 5 U.S.C. 552b(c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of this Committee and matters the release of which would represent a clearly unwarranted invasion of personal privacy.

**E. Miscellaneous—**Discuss miscellaneous matters related to the conduct of Committee activities and complete discussion of topics that were not completed during previous meetings as time and availability of information permit.

**56th ACNW Meeting,** August 25–26, 1993, Bethesda, MD. Agenda to be announced.

**57th ACNW Meeting,** September 22–23, 1993, Bethesda, MD. Agenda to be announced.

**58th ACNW Meeting,** October 27–28, 1993, Las Vegas, NV. Agenda to be announced.

**59th ACNW Meeting,** November 22–23, 1993, Bethesda, MD. Agenda to be announced.

**60th ACNW Meeting,** December 15–16, 1993, Bethesda, MD. Agenda to be announced.



**APPENDICES**  
**55TH ACNW MEETING**  
**JULY 20-22, 1993**

- I. Federal Register Notice**
- II. Meeting Schedule and Outline**
- III. Meeting Attendees**
- IV. Future Agenda and Working Group Activities**
- V. List of Documents Provided to the Committee.**



APPENDIX II

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

July 6, 1993

SCHEDULE AND OUTLINE FOR DISCUSSION  
55TH ACNW MEETING  
JULY 20-22, 1993

Tuesday, July 20, 1993, Room P-110, 7920 Norfolk Avenue, Bethesda, Md.

1) <sup>5</sup>1:00 - <sup>55</sup>1:45 P.M.

Opening Remarks by ACNW Chairman (Open)  
1.1) Opening Statement (DWM/RKM)  
1.2) Items of Current Interest (DWM/RKM)

2) <sup>2:10</sup>1:45 - <sup>4:55</sup>5:00 P.M.

Prepare for Meetings with Several Commissioners (Closed)

The Committee will discuss issues that will serve as topics for discussion during the Committee's meeting with several Commissioners. Possible topics include: (DWM/RKM)

- 2.1) the revised Charter
- 2.2) renewal of appointments for members
- 2.3) future ACNW resources
- 2.4) candidates for membership

(Note: A portion of this session may be closed to public attendance pursuant to 5 U.S.C. 552b(c)(2) and (6) to discuss organizational and personnel matters that relate solely to the personnel rules and practices of this advisory Committee and matters the release of which would represent a clearly unwarranted invasion of personal privacy.)

5:00 P.M.

\* \* \* \* RECESS \* \* \* \*

Wednesday, July 21, 1993, Room P-110, 7920 Norfolk Avenue, Bethesda, Md.

3) <sup>45</sup>8:30 - <sup>45</sup>10:00 A.M.

High-Level Waste Management Quality Assurance (Open) (WJH/GNG)  
Hear a briefing by and hold discussions with representatives of the NRC staff on the status of high-level waste management quality assurance. K. Hooks (NRC staff)

4) <sup>45</sup>10:00 - <sup>11:00</sup>10:15 A.M.

\* \* \* \* BREAK \* \* \* \*

5) <sup>11:00</sup>10:15 - <sup>11:30</sup>11:30 A.M.

Discuss Recent ACNW Activities (Open)  
4.1) Report on ACNW visit to Canadian Whiteshell Nuclear Laboratory and the Underground Research Laboratory (MJS/WJH/GNG)  
4.2) Report on DOE Workshop on Multi-Purpose Canister (July 1-2, 1993) (DWM/GNG)

[ = Transcribed portion of meeting ]

55th ACNW Meeting Schedule

2

4.3) Report on NWTRB Meeting on Thermal Loads  
for the Proposed HLW Repository (July 13-  
14, 1993) (PWP/LGD)

4.4) Report on Health Physics Society Meeting  
(July 11-15, 1993) (DWM/GNG)

11:30 - 12:30 P.M.

\* \* \* \* LUNCH \* \* \* \*

12:30 - 1:00 P.M.

Travel from Bethesda to One White Flint North,  
Rockville, Md.

5) 1:00 - 2:15 P.M.

Meet with Commissioners Rogers and de Planque  
(Closed)

The Committee will meet with the Commissioners  
in the 18th Floor Conference Room OWFN to  
discuss topics listed in agenda item 2.

(DWM/JTL)

(Note: A portion of this session may be closed  
to public attendance pursuant to 5 U.S.C.  
552b(c)(2) and (6) to discuss organizational and  
personnel matters that relate solely to the  
personnel rules and practices of this advisory  
Committee and matters the release of which would  
represent a clearly unwarranted invasion of  
personal privacy.)

6) 2:30 - 3:30 P.M.

Meet with Commissioner Remick (Closed)

The Committee will meet with Commissioner Remick  
in his office on the 18th Floor OWFN to discuss  
topics listed in agenda item 2. (DWM/JTL)

(Note: A portion of this session may be closed  
to public attendance pursuant to 5 U.S.C.  
552b(c)(2) and (6) to discuss organizational and  
personnel matters that relate solely to the  
personnel rules and practices of this advisory  
Committee and matters the release of which would  
represent a clearly unwarranted invasion of  
personal privacy.)

3:30 - 4:00 P.M.

Travel from One White Flint North, Rockville,  
Md. to 7920 Norfolk Avenue, Bethesda, Md.

7) 4:00 - 5:30 P.M.

Committee Activities/Future Agenda (Open/Closed)

Discuss anticipated and proposed Committee  
activities, future meeting agenda, and  
organizational and personnel matters relating to  
ACNW Members and staff.

7.1) Finalize plans for ACNW retreat August 25-  
26, 1993, Bethesda, Md.

7.2) Review activities through October 1993

7.3) Review Working Group schedules  
 7.4) Review EDO responses to recent ACNW reports  
 7.5) ACNW Membership and Staff (Closed)  
 (Note: A portion of this session may be closed to public attendance pursuant to 5 U.S.C. 552b(c)(2) and (6) to discuss organizational and personnel matters that relate solely to the personnel rules and practices of this advisory Committee and matters the release of which would represent a clearly unwarranted invasion of personal privacy.)

5:30 P.M.

\* \* \* \* RECESS \* \* \* \*

Thursday, July 22, 1993, Room P-110, 7920 Norfolk Avenue, Bethesda, Md.

8) 8:30 - 11:00 A.M.

Decommissioning and Decontamination Activities (Open)

Hear a briefing and hold discussions with representatives of the NRC staff (L. Pittiglio), Public Service of Colorado, and the Long Island Power Authority regarding the status of decommissioning plans for:

- 8.1) Fort St. Vrain Nuclear Power Plant
- 8.2) Shoreham Nuclear Power Plant

10:20 - 10:35 (Break)  
 25  
 11:00 11:15 A.M.

\* \* \* \* BREAK \* \* \* \*

9) 11:15 - 1:00 P.M.

Preparation of ACNW Reports (Open/Closed)

Discuss proposed ACNW reports regarding items considered during this meeting and previous meetings.

(Note: A portion of this session may be closed to public attendance pursuant to 5 U.S.C. 552b(c)(2) and (6) to discuss organizational and personnel matters that relate solely to the personnel rules and practices of this advisory Committee and matters the release of which would represent a clearly unwarranted invasion of personal privacy.)

1:00 P.M.

\* \* \* \* ADJOURN \* \* \* \*

# APPENDIX III: MEETING ATTENDEES

55TH ACNW MEETING  
JULY 20-22, 1993

<u>ACNW MEMBERS</u>	<u>1st Day</u>	<u>2nd Day</u>	<u>3rd Day</u>
Dr. William J. Hinze	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Dr. Dade W. Moeller	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Dr. Paul W. Pomeroy	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Dr. Martin J. Steindler	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>

<u>ACNW STAFF</u>	<u>1st Day</u>	<u>2nd Day</u>	<u>3rd Day</u>
Ms. Lynn F. Deering	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Mr. Giorgio N. Gnugnoli	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Dr. John T. Larkins	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Mr. Howard J. Larson	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Mr. Richard K. Major	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>
Mr. H. Stanley Schofer	<u>  X  </u>	<u>  X  </u>	<u>  X  </u>

## NRC STAFF

Charlotte Abrams	NMSS
John Austin	NMSS
William Belke	NMSS
Larry Bell	NMSS
Pauline Brooks	NMSS
Stewart Brown	NRR
Richard Dudley	NRR
A. L. Eiss	NMSS
Kenneth Hooks	NMSS
Tim Johnson	NMSS
Clay S. Mayberry	NRR
Paul Michaud	RIV
Clayton Pittiglio	NMSS
Joe Youngblood	NMSS

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

Hector Barbeito	Bechtel Search Licensing
Tony Batt	Donrey Media Group
David Battorff	Defense Plant Waste
Carl Belia	NWTRB
Mary Birch	M&O/Duke
Wayne Booth	Weston
Carson Calton	Westinghouse/Ft. St. Vrain
Hal Cleary	Weston
Paul Collette	ABB-CE
Drew Corson	ICF
Clegg Crawford	Public Service Co. of Colorado
E. T. Dailey	SEI
Stanley Dlugoles	ABB
J. L. Elliott	M&O - OCRWM
Thomas Gates	ABB
Kevin Graney	Bechtel
Michael Holmes	Public Service Co. of Colorado
Sam Holton	DOE
Rob Howard	Weston
M. W. kirk	NUMARC
Bruce Mabrito	CNWRA - SWRI
Rhonda Maddox	EPA/OAR/ORIA.
Homi Minwalla	Weston
Alex Palenstal	ICF
Cas Robinson	NARUC
John Russell	CNWRA
J. Scecina	B&W Nuclear Tech.
Stephen Schdenwiesner	Long Island Power Authority
J. R. Smith	B&W Nuclear Technologies
R. Spencer	DOE
Robert Sweeney	STS
E. Tiesenhausen	Clark County
Carl Vitalbo	Westinghouse
Ray Wallace	USGS/HQ
Zita Yurko	Westinghouse

## APPENDIX IV: FUTURE AGENDA

### 56th ACNW Committee Meeting August 25, 1993 (Tentative Schedule)

- . Executive Session (Open/Closed) - The Committee will discuss a strategy for implementing the recent directives from the Commission, including changes required by the revised ACNW charter. The development of methods for ACNW operation, the identification of candidates for appointment to the Committee, and confirmation of topical areas for ACNW review will form the central focus of the meeting.

Committee Activities (Open/Closed) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate. Also, the members will discuss matters and specific issues that were not completed during previous meetings.

### Working Group Meeting

Characterization of the Unsaturated Zone Flow and Transport Properties, (October 26, 1993), Las Vegas, Nevada, (Lynn Deering)  
- The Working Group will examine the current understanding of processes controlling matrix and fracture-flow in the unsaturated zone at Yucca Mountain, existing approaches to model or bound fracture flow in the unsaturated zone, insights gained from performance assessment activities regarding the sensitivity of infiltration and other parameters and assumptions, on-going site characterization studies, the relationship between performance assessment and site characterization activities, and significant data gaps.

MEETING NOTEBOOK CONTENTS

TAB

Contents

2 Prepare for Meetings with Several Commissioners (Closed)

1. Status Report, undated
2. Staff Requirements Memorandum to Dade Moeller and John Larkins from Samuel Chilk, dated June 8, 1993, Regarding COMIS-93-003, COMFR-93-001, COMKR-93-001 - ACNW Charter and COMSECY-93-018 - Renewal of Appointments of Advisory Committee on Nuclear Waste Members
3. Memorandum for the Chairman from Kenneth Rogers, dated February 22, 1993, Regarding Thoughts About ACNW's Program Plan
4. Memorandum for Seth Coplan, Regis Boyle, and Kay Whitfield, from Richard Major, dated July 15, 1993, Regarding July 21, 1993 ACNW Meetings with Commissioners Remick, Rogers and de Planque, with attachment
5. Four Papers from ACRS Members Moeller, Steindler (2), and Pomeroy on Suggested Topics for Discussion
6. Draft Minutes of the 54th ACNW Meeting, June 25-26, 1993 [Official Use Only]
7. ACNW Report, Preliminary Comments on the June 8, 1993 Memorandum from S. Chilk to D. Moeller and J. Larkins Regarding Renewal of Appointments and ACNW Charter Modifications, dated June 30, 1993

3 High-Level Waste Management Quality Assurance

8. Status Report
9. Memorandum for Division of Waste Management from Rober Browning, Director, Division of Waste Management, dated September 23, 1986, Regarding Promulgation of Internal QA Plan, with enclosure
10. Letter for Ralph Stein, Office of Civilian Radioactive Waste Management, DOE, from John Linehan, Division of High-Level Waste Management (HWLM), NRC, dated March 23, 1989, Regarding Review Plan for HLW Repository QA Program Descriptions, Revision 2
11. Memorandum for James Kennedy, HLWM, from Ken Hooks, HLWM, dated October 6, 1989, Regarding Observation Audit Procedure, with enclosure NRC Manual Chapter 0320 "Conduct of Observation Audits"
12. Letter to John Roberts, OCRWM, DOE, from Joseph Holonich, NRC, dated October 21, 1992, Regarding Comments on Nuclear Waste Management Systems Management and Operating Contractor Quality Assurance Program Description

4 Discussion of Recent ACNW Activities

13. Memorandum for Dade Moeller, Chairman, ACNW, from Giorgio Gnugnoli, Senior Staff Scientist, dated July 6, 1993,



APPENDIX V  
LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE

MEETING HANDOUTS

AGENDA  
ITEM NO.

DOCUMENTS

1 Chairman's Report

1. Items of Possible Interest to ACNW Members and Staff, dated July 17, 1993, Prepared by Dade Moeller
2. Article from Science, Vol. 261, July 2, 1993, titled "Supreme Court to Judges: Start Thinking Like Scientists"
3. The United States Law Week, 61 LW 4805, dated June 29, 1993, Regarding William Daubert v. Merrell Dow Pharmaceuticals

2 Prepare for Meetings with Several Commissioners (Closed)

4. Memorandum to Dade Moeller from Martin Steindler, dated July 16, 1993, Regarding Comments on Commissioner Rogers Memo of 2/22/93 on Thoughts About ACNW's Program Plan [Official Use Only]
5. Role of the Committee, undated, 3 pages [Official Use Only]

3 High-Level Waste Management Quality Assurance

6. Quality Assurance in the High-Level Nuclear Waste Repository Program, dated July 21, 1993, Prepared by Kenneth R. Hooks [Viewgraphs]

4 Discussion of Recent ACNW Activities

7. Letter to Richard Major from Dade Moeller, dated July 17, 1993, Regarding Summary Comments on Annual Meeting of the Health Physics Society, Atlanta, Georgia, with enclosure

8 Decommissioning and Decontamination Activities

8. Presentation on Status of Decommissioning of Fort St. Vrain Nuclear Generating Station, Unit 1, dated July 22, 1993 [Viewgraphs]
9. Decommissioning of the Fort St. Vrain Nuclear Station, dated July 22, 1993, Public Service Company of Colorado
10. Presentation to the Advisory Committee on Nuclear Waste on Status of Shoreham Nuclear Power Station Decommissioning Project, dated July 22, 1993, Long Island Power Authority [Viewgraphs]

Regarding Tour of Canadian Used Fuel Disposal Research Facilities

14. Report on DOE Workshop on Multi-Purpose Canister, Crystal City, Virginia, July 1-2, 1993, Prepared by Dade Moeller, dated July 5, 1993
15. Note to John Larkins from Lynn Deering, dated May 13, 1993, Regarding Response to J. Larkins on Thermal Loads [Report on NWTRB Meeting on Thermal Loads Meeting Information]
16. Letter for the Honorable Ivan Selin from John Larkins, Executive Director, ACRS/ACNW, dated July 6, 1993, Regarding ACNW Paper to be Presented at the July 1993 Health Physics Society Meeting, with attachment

5 Committee Activities/Future Agenda

17. ACNW Retreat, August 25-26, 1993
18. Review Full Committee Activities through December 1993
19. Other topics to be scheduled
20. ACNW Working Group Schedules
21. Blaha List of proposed ACNW agenda items
22. Review EDO Responses to Recent ACNW Reports

6 Decommissioning and Decontamination Activities

23. Status Report
24. "Decommissioning - Lessons Learned", SECY-92-382, dated November 10, 1992 [with enclosures]
25. Memorandum from Richard Bangart, NMSS dated June 14, 1993, re: Management Plan for Reactor Decommissioning
26. "HKG Investigating Groundwater Tritium Contamination at THTR," Nucleonics Week January 21, 1993
27. Baeumer, R. and G. Dietrich, "Decommissioning Concept for the high temperature reactor THTR-300," Kerntechnik. vol. 56 No. 6, December 1991.