ACRS-2948
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September 8-10, 1994

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CERTIFIED

Certified: November 3, 1994

MINUTES OF THE 413TH MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
SEPTEMBER 8-10, 1994
ROCKVILLE, MARYLAND

The 413th meeting of the Advisory Committee on Reactor Safeguards was held at Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on September 8-10, 1994. The purpose of this meeting was to discuss and take appropriate action on the items listed in the attached agenda. The meeting was open to public attendance, except for a portion that dealt with matters of a personal nature. There were no written statements nor requests for time to make oral statements from members of the public regarding the meeting.

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 are available for purchase from Ann Riley & Associates, Ltd., 1612 K Street, N.W., Washington, D.C. 20006.]

ATTENDEES

ACRS Members: Dr. Thomas S. Kress (Chairman), Mr. William J. Lindblad (Vice-Chairman), Mr. James C. Carroll, Dr. Ivan Catton, Mr. Peter R. Davis, Mr. Carlyle Michelson, Dr. Dana A. Powers, Dr. Robert L. Seale, Dr. William J. Shack, and Mr. Charles J. Wylie. [For a list of other attendees, see Appendix III.]

I. CHAIRMAN'S REPORT (Open)

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

Dr. Thomas S. Kress, Committee Chairman, opened the meeting at 8:30 a.m. and reviewed the schedule for the meeting.

Dr. Kress announced that:

- Mr. Steven Mays, ACRS Senior Fellow, has been appointed Chief, Reactor Risk Section, Office for Analysis and Evaluation of Operational Data (AEOD).
- Ms. Lee Berry, NRR, will be on a four-month rotation with the ACRS/ACNW office to assist in the development of the ACRS/ACNW Full Text Management System.

II. PROPOSED GENERIC LETTER ON DIGITAL INSTRUMENTATION AND CONTROL (I&C) SYSTEMS RETROFITS (Open)

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

Dr. William Shack, Chairman of the Computers in Nuclear Power Plant Operations Subcommittee, introduced this topic to the Committee.

NRC Staff Presentation

Mr. Paul Loeser, Instrumentation & Controls Branch, NRR, discussed the following background topics:

- A previous draft Generic Letter on Analog-to-Digital Retrofits published for public comment in August 1992, which was subsequently retracted.
- The NRC Committee for the Review of Generic Requirements (CRGR) request that the staff develop a threshold below which the licensee would not require prior staff approval to implement a digital retrofit.
- Staff involvement in the industry's development of a guideline document for assisting licensees in properly implementing digital retrofits (NUMARC/EPRI report TR-102348 "Guideline on Licensing Digital Upgrades"), which was published in final form in January 1994.
- Staff recognition of the benefits of digital technology, and its concerns regarding software common-mode failure potential, complexity, electromagnetic interference (EMI), licensee inexperience with this technology, and commercial dedication.
- Staff objectives for addressing its concerns, i.e., that licensees provide (1) a high quality product throughout the design, verification, and implementation phases, and (2) diversity in function, hardware, software, and vendors.

Mr. Loeser discussed the contents of the NUMARC/EPRI guideline for digital upgrades, including:

- Reference to existing industry standards.
- Importance of quality assurance in software design, commercial grade dedication, compatibility with EMI environment, human-machine interface, testing, procedures, and training of personnel.

- Reference to Appendix B of IEEE 7-4.3.2-1993 standard on evaluation for defense-in-depth and use of diversity.

Mr. Loeser gave the NRC staff's perspective on the industry guideline, including:

- Guidelines.
- The continuing requirement to evaluate any proposed retrofit in accordance with 10 CFR 50.59.
- The need to conclude that an unreviewed safety question (USQ) exists if uncertainty exists in this determination.
- Staff clarifications in the proposed Generic Letter, i.e., the definition of "system-level" as the digital system, and the extent of documentation required to support the USQ determination.

Mr. Loeser noted that the staff expected to issue the proposed Generic Letter for public comment following ACRS review, and would be developing digital modification inspection guidance and training for inspectors.

Nuclear Energy Institute Presentation

Mr. Anthony Pietrangelo, Nuclear Energy Institute (NEI), gave the NEI perspective on the guideline, including:

- The use of the guideline as a "roadmap" to applicable industry references.
- The expectation that this guideline will become as useful as an adjunct to the NSAC 125 guideline for 10 CFR 50.59 reviews.

During the discussion, the Committee questioned the presenters on the guideline's emphasis on EMI concerns, how the potential for spurious actuations due to environmental conditions is addressed, the degree of diversity needed to conclude that a USQ does not exist, and the status of the staff's Standard Review Plan for digital reviews.

Conclusion

The Committee issued a report to the NRC Executive Director for Operations (EDO) dated September 14, 1994, on this subject.

Mr. Carroll asked for a staff briefing on the status of NRC research programs into the environmental qualification requirements for digital equipment.

III. PROPOSED GENERIC LETTER ON VOLTAGE-BASED REPAIR CRITERIA FOR WESTINGHOUSE STEAM GENERATOR TUBES (Open)

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

Dr. Thomas Kress introduced the subject by noting the highly professional behavior of the staff in notifying the Committee of erroneous information presented to the Material and Metallurgy Subcommittee on August 3, 1994. Mr. Thomas Essig, NRR, presented the corrected off-site dose calculation for a main steam line break scenario.

The staff had incorrectly used the radioactive iodine decay constant in calculating the rate of iodine release from the fuel prior to a reactor trip. When the staff correctly used the equilibrium iodine decay constant, which is the sum of the radioactive decay and the cleanup system removal constants, the iodine release rate increased by a factor of about 25. The corrected calculation used new assumptions on the rate of primary coolant leakage, the concentration of iodine in the primary coolant following a reactor trip, and the off-site dispersion factor.

Dr. Powers noted that the values used in the off-site dose calculation were associated with different levels of uncertainties and made the conservatism of the final calculated dose difficult to evaluate. Mr. Essig stated that the distribution of parameters and selected percentile values would be considered for use in calculating off-site dose limits during future rulemaking.

Conclusion

The Committee issued a report to Chairman Selin, dated September 12, 1994, on this issue.

IV. PROPOSED REVISIONS TO APPENDIX J TO 10 CFR PART 50, "PRIMARY REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER-COOLED POWER REACTORS" (Open)

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

Mr. Peter Davis, Chairman of the Containment Systems Subcommittee, noted that the Subcommittee had met on the previous day to discuss the proposed revisions to Appendix J in regard to extending the time intervals for containment leakage testing based on the performance of the components. He indicated that the staff would describe the proposed changes, then representatives of the NEI would describe guidelines for the implementation of the changes,

and finally, the staff would discuss the two remaining unresolved issues between the NRC and NEI.

NRC Staff Presentation

Dr. Moni Dey, RES, discussed performance-oriented containment leak-test requirements and the development of an Appendix J Rule that would provide an optional alternative to the current requirements of Appendix J. He indicated that this action was being pursued under the Regulatory Improvements Program. Dr. Dey briefly reviewed the objective, policies and framework of this Program. He discussed the findings of risk studies that were performed to support the relaxation of testing intervals and allowable leakage rates. The current proposed Rule only addresses testing intervals. In closing, he indicated that the details of test intervals for Type A, B and C components would be specified in the NEI Guidelines and that the staff intended to adopt these Guidelines in a Regulatory Guide.

Nuclear Energy Institute Presentation

Mr. Jim Eaton, NEI, discussed the implementation guidelines for the proposed Appendix J Rule and listed the following surveillance test intervals:

Type A - one test in ten years (120 months)
Type B - Range of intervals from once per 24 months up to a maximum of once per 120 months
Type C - Range of intervals from once per 24 months up to a maximum of once per 120 months.

Mr. Mark Meisner, Entergy Operations Inc. (Grand Gulf), discussed the industry support for a ten year (120 months) testing interval for the Local Leak Rate Test (LLRT). He stated that the testing uncertainties are small compared to safety margins and that imprecise values are dealt with conservatively. He requested that the Committee endorse approval of 10 year LLRT intervals with staggered testing.

Unresolved Issues Between NRC and NEI

Mr. Richard Barrett, NRR, discussed the two unresolved issues that remain between the staff and NEI. These two issues are: (1) Need for additional Technical Specifications to ensure that changes in surveillance intervals are reviewed by the staff, and (2) Extension of the testing interval initially to only 5 years (60 months) instead of 10 years (120 months) due to a lack of experience with extended intervals.

Conclusion

The Committee provided a report to Chairman Selin dated September 19, 1994, on this matter. This report also contained additional comments by T. Kress and R. Seale, and by J. Carroll, I. Catton and W. Lindblad.

V. MEETING WITH THE NRC COMMISSIONERS (Open)

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

In preparation for the meeting, the Committee reviewed the areas of interest to be discussed with the Commissioners. The Committee recessed at 12:15 p.m. on September 8, 1994, and reconvened at 1:30 p.m. in the Commissioners Hearing Room, One White Flint North, for the meeting.

The Committee discussed the following items of mutual interest with the Commissioners:

- Status of the ACRS Review of the Passive Plant Designs and the Review of the Associated Test Programs
- Lessons Learned from the ACRS Review of the Evolutionary Plant Designs
- Protective Action Guidelines
- Thermo-Lag Fire Barriers
- National Academy of Sciences/National Research Council Study and Workshop on Digital Instrumentation and Control Systems
- Steam Generator Tube Repair Criteria
- Need for Review of Rationale for Regulation
- Selection of New ACRS Members

[In accordance with Staff Requirements Memorandum to William C. Parler, OGC, from Samuel J. Chilk, SECY, dated June 9, 1989, the Office of the Secretary provides a transcript to the ACRS as the record for this portion of the meeting. The transcript is attached as Appendix VI.]

The meeting with the Commissioners was adjourned at 2:45 p.m. by Chairman Selin.

Conclusion

In a Staff Requirements Memorandum dated September 20, 1994, the following requests were identified:

- The Commission requested further guidance and insight on determining where the current population of operating nuclear

power plants, both individually and collectively, fall in relation to the safety goals.

- The Commission requested that the Committee continue to monitor the NRC's actions and ensure that there are no areas being ignored or overlooked through an error of omission.

VI. REGULATORY ANALYSIS GUIDELINES (Open)

[Note: Dr. Medhat El-Zeftawy was the Designated Federal Official for this portion of the meeting.]

Dr. Bill M. Morris, RES, stated that the Regulatory Analysis Guidelines proposed document is the NRC's policy setting document with respect to regulatory analyses. The document contains several policy decisions that have broad implications for the NRC and its licensees. During the November 1992 ACRS meeting, the Committee reviewed an earlier draft of NUREG/BR-0058, Revision 2, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission." The Committee issued its report to the EDO on November 12, 1992. The staff responded to the ACRS report in a letter dated February 19, 1993. During the rest of 1993, the staff revised the draft and issued it for public comment. The public comment period ended in December 1993. The staff presented the draft of final Guidelines to Committee to Review Generic Requirements in August 1994.

Dr. Sidney E. Feld, RES, summarized the significant changes based on the ACRS review as follows:

- Treatment of voluntary actions - credit was given only for sensitivity analysis purposes.

- Discount rate - use OMB's recommended discount rate.

- Health and safety effects - subject to present worth considerations.

The staff received 14 comments on the draft Guidelines. These included comments from two nuclear utility trade organizations, seven individual nuclear utilities, one state agency, one public interest group, one private citizen, one NRC employee, and the U.S. Department of Energy. The revisions in response to the public comments were generally not substantive.

The significant changes to the Guidelines based on the public comments are as follows:

- Backfit findings - to alleviate the problem of dispersal of backfitting information throughout the regulatory analysis, all backfit findings will be highlighted.

- Defirition of Containment failure - modified to be consistent with SECY-93-087.

- Definitions of values and impacts - all positive consequences are redefined as values; all negative consequences are classified as impacts.

- Treatment of voluntary actions - no credit to be given in the base case without exception; performance-based requirement is incentive for voluntary action.

- Modification of the Commission paper to address the comments in an appendix.

Mr. Anthony Pietrangelo, NEI, stated that the industry did not have the opportunity to review the NRC staff's response to the public comments.

The Committee decided to write a report to the Commission stating its concern regarding the staff's proposal of the continued use of an undiscounted $1000/man-rem as a surrogate for the actual discounted values. Another concern of the Committee was the new proposed definitions for containment failure taken from SECY-93-087.

The Committee recommended that the new Regulatory Analysis Guidelines should not be issued until the above issues are reconsidered.

Conclusion

The Committee issued a report to Chairman Selin dated September 14, 1994, on this matter.

VII. REPORT ON THE MEETING OF THE PLANNING AND PROCEDURES SUBCOMMITTEE HELD ON SEPTEMBER 7, 1994 (Open)

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

The Committee heard a report from Dr. Kress on the Planning and Procedures Subcommittee meeting held on September 7, 1994. The following items were discussed:

Status of Member Nomination - Dr. Kress reported that about 290 applications have been received in response to the press release and announcement in the Federal Register. The last day for submitting applications was August 31, 1994. Mr. Lindblad recommended that the members identify potentially qualified candidates from the table summarizing the vital information on each applicant, then examine in detail their full applications.

Dr. Larkins reported that the six highly qualified applicants and potential applicants identified during the August Full Committee meeting were contacted. Two potential applicants indicated that they were not interested in being considered.

Dr. Kress agreed to prepare the final selection criteria that can be used in screening applicants and as guidance for the rating panel in nominating new members. The Committee will continue the discussion of qualifications of candidates during the October meeting.

Status of the ACRS Fellows Program - The Committee discussed the status of the ACRS Fellows Program. Dr. Larkins expects to continue the search and selection process.

High Burnup Fuel - The Committee discussed the merits of getting involved in the high fuel burnup issue. Since there will be a session on this subject during the NRC Water Reactor Safety Conference on October 24-26, 1994, the Committee concurred with the Subcommittee recommendation that Mr. Rick Sherry, ACRS Senior Fellow, attend this meeting and provide a written report to the Committee. Dr. Larkins stated that members who are also interested in attending this conference should inform Ms. Tanya Winfrey.

The Committee agreed to schedule a briefing on this subject during the November ACRS meeting.

ACRS Review of the NRC Safety Research Program - The members discussed whether the Committee should send periodic letters to the NRC Chairman identifying specific research needs in the reactor safety area.

The Committee agreed that in the course of its review of various matters, any new research needs can be reported to the Commission in the normal course of reporting to the Commission as it has been done in the past. Also the Committee requested that future meeting schedules and outlines include a block of time to discuss new research needs identified during the meeting.

The Committee agreed to invite the Director of the Office of Nuclear Regulatory Research to brief the Committee periodically on the status of NRC research program and any lessons learned.

Management of Federal Advisory Committees - Dr. Larkins explained that the NRC may be required to prepare an annual report to Office of Management and Budget that includes "specific performance measures used to evaluate each committee's progress in achieving its stated goals or mission." The ACRS staff plans to propose an approach for developing the performance measures for evaluating the Committee's progress.

Public Use of NRC's Toll-Free Telephone Service - To expand public access to the NRC, the Office of Information Resources Management staff has proposed that the public be allowed use of the general toll free telephone number. If the Commission approves this proposal, two more telephone lines will be installed to accommodate the anticipated increase in the volume of calls to the NRC switchboard. The additional lines will support simultaneous calls and avoid busy signals. No adverse impact on members' ability to contact ACRS staff through use of the general toll free number is anticipated. The first six months of this expanded use will be treated as a trial period to assess the impact of public use of the toll free telephone system.

Miscellaneous Items - The members discussed the U.S. Department of Energy restructuring of the National Laboratories and the effect this would have on the research interests of the NRC. Dr. Seale reported on his meeting with Commissioner Rogers to discuss the issue.

VIII. PROPOSED FINAL VERSION OF NUREG-1465, "ACCIDENT SOURCE TERMS FOR LIGHT-WATER NUCLEAR POWER PLANTS" (Open)

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

Dr. Dana Powers, Acting Chairman of the Severe Accidents Subcommittee, indicated that the staff had provided a final version of NUREG-1465 that defines the accident source terms for use in the safety analysis of future light water reactors to replace the source term specified in Regulatory Guides 1.3 and 1.4. He also noted that a representative of Northeast Utilities would brief the Committee on the safety importance of the proposed accident source term release timing assumptions.

NRC Staff Presentation

Mr. Len Soffer, RES, described the current licensing source term based on TID-14844 (1962) and discussed the research activities over the past 10-15 years that have formed the basis for the proposed revisions in the source terms. He discussed the source terms included in an earlier draft of NUREG-1465 and indicated how these have been revised based on public comments or studies.

Mr. Soffer described the revised nuclide grouping (eight groups) and discussed the specific PWR or BWR source terms for four timed categories of releases into containment (gap release, early in-vessel, ex-vessel and late in-vessel). He compared the NRC source term values with the EPRI values for the gap and early in-vessel phases only. The major differences were in regard to the heavy element releases with the staff about a factor of 20 higher.

For regulatory applications, Mr. Soffer indicated that the source terms in NUREG-1465 were intended for future plants analyses, however the staff was considering the possible optional application to existing plants. He also indicated that the staff is proposing to use the gap and early in-vessel releases for analysis of design basis accidents and to use the total releases for assessment of equipment survivability under severe accident conditions.

Northeast Utility Presentation

Mr. Ray Crandall, Northeast Utilities, discussed the safety concerns associated with the accident source term timing assumptions. He reviewed the current source term timing that specifies a release of 100 percent of the noble gases, 50 percent of the iodines and one percent of the solid fission products instantly into containment. He then described seven examples where Northeast considered that the assumed instant release had a negative impact on safety. Components or systems affected included emergency diesels, control room pressurization bottles, MOVs, and electrical equipment components. Other issues discussed included EOPs, degraded design for alternate functions and occupational exposure.

In closing, he recommended that the Committee approve NUREG-1465 in total with the new source terms and release timing. He also indicated that full implementation of the new source terms would be expensive and that a timing only option would be simple, inexpensive and technically justified. Therefore, for existing plants, he recommended that the staff allow the licensees to adopt just the timing assumptions for reanalysis of their accidents.

Conclusion

The Committee issued a report to Chairman Selin dated September 20, 1994, on this matter.

IX. VESSEL HEAD PENETRATION CRACKING (Open)

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

Dr. William Shack, Chairman of the Materials and Metallurgy Subcommittee, introduced the discussion by noting that the French identified a reactor vessel head penetration leak in 1991. Dr. Alex Marion, NEI, stressed the industry's cooperative and coordinated efforts in studying reactor vessel penetration cracks.

Mr. Warren Bamford, Westinghouse, presented historical background on reactor vessel head penetration leakage and the NEI Alloy 600 Ad Hoc Advisory Committee, which included representatives from three different owners groups and the Electrical Power Research Institute. He discussed the generic safety evaluation conclusions, the flaw acceptance criteria, and the inspection performance demonstrations. The safety evaluation indicated no immediate safety concern.

Mr. James Davis, NRR, indicated that based on the reported inspection results the safety impact of reactor vessel head penetration cracking is minimal. However, he stated that there is a potential in the United States for cracking in a large number of control rod drive mechanism housings, and that definite conclusions should not be reached until reactor vessel head inspections at the three volunteer sites are completed.

The Committee discussed conservatism in the generic safety evaluation calculation, the inspection processes and procedures, the fabrication of reactor vessel heads, the possibility of cracks leading to a rod ejection accident, and the potential for cracks in reactor vessel and pressurizer penetrations.

Conclusion

This briefing was for information only. No Committee action was taken.

X. GENERIC LETTER ON INTERGRANULAR STRESS CORROSION CRACKING OF CORE SHROUDS IN BWR PLANTS (Open)

[Note 1: Mr. Noel Dudley was the Designated Federal Official for this portion of the meeting.]

[Note 2: Dr. Shack recused himself from review of this issue due to conflict-of-interest considerations.]

Mr. Edwin Hackett, NRR, provided an overview of the technical and regulatory issues associated with Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors," and presented the planned staff follow up actions. Mr. Robin Dyle, Southern Nuclear, presented the BWR Owners Group's activities in addressing core shroud cracking, and described future industry initiatives.

The Committee discussed ASME Section XI calculations in conjunction with seismic events, past inspection results, future inspection activities, and repairs of cracked shrouds.

Conclusion

This briefing was for information only. No committee action was taken.

XI. RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS (Open)

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

The responses from Chairman Selin and the EDO to the comments and recommendations included in previous ACRS reports were discussed as follows:

- EDO letter dated August 4, 1994, responding to the ACRS report dated May 11, 1994, concerning Draft Policy Statement on the Use of Probabilistic Risk Assessment Methods in Reactor Regulatory Activities.

  The Committee decided that it was satisfied with the EDO's response.

- Chairman Selin letter dated August 23, 1994, responding to the ACRS report dated July 14, 1994, concerning Proposed National Academy of Sciences/National Research Council Study and Workshop on Digital Instrumentation and Control Systems.

The response addressed the issues raised in the Committee's report. The Committee will continue to work with the NRC staff on this matter.

- EDO letter dated August 25, 1994, responding to the ACRS report dated July 13, 1994, concerning Emergency Planning Zones (EPZs), Protective Action Guidelines, and the New Source Terms.

  The Committee decided to take no action related to the EDO's response at this time. Dr. Kress stated that he will follow the staff plans to reevaluate, for possible application to advanced reactor designs, the technical basis for the EPZs given in NUREG-0396.

- EDO letter dated August 26, 1994, responding to the ACRS report dated October 14, 1993, concerning Proposed Rule and Draft Regulatory Guide to Address Resolution of Generic Issue 23, "Reactor Coolant Pump Seal Failure."

  The Committee decided that it was satisfied with the EDO's response.

XII. EXECUTIVE SESSION (Open/Closed)

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

A. Reports and Memoranda

Proposed Generic Letter on the Use of NUMARC/EPRI Report TR-102348, "Guidelines on Licensing Digital Upgrades" (Report to James M. Taylor, Executive Director for Operations, from T. S. Kress, ACRS Chairman, dated September 14, 1994)

Proposed Generic Letter 94-XX, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes" (Report to Chairman Selin from T. S. Kress, ACRS Chairman, dated September 12, 1994)

Proposed Revisions to Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" (Report to Chairman Selin from T. S. Kress, ACRS Chairman, dated September 19, 1994)

Proposed Final Version of NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants" (Report to Chairman Selin from William J. Lindblad, ACRS Vice-Chairman, dated September 20, 1994)

Revised Regulatory Analysis Guidelines (Report to Chairman Selin from T. S. Kress, ACRS Chairman, dated September 14, 1994)

Superior Performance by the Office of Nuclear Reactor Regulation Staff (Memorandum to James M. Taylor, Executive Director for Operations, from T. S. Kress, ACRS Chairman, dated September 13, 1994)

Proposed Rulemaking to Amend 10 CFR Parts 50, 55, and 73 - "Reduction of Reporting Requirements Imposed on Licensees of the Nuclear Regulatory Commission" (Memorandum to Eric S. Beckjord, Director, Office of Nuclear Regulatory Research, from John T. Larkins, Executive Director, dated September 13, 1994)

Revised Abnormal Occurrence Criteria (Memorandum to James M. Taylor, Executive Director for Operations, from John T. Larkins, Executive Director, dated September 13, 1994)

B. Foreign Travel

The Committee approved funding support for Dr. Powers to attend and participate in the PHEBUS FP Information Seminar to be held November 17-18, 1994, in Aix-en-Provence, France. The purpose of this travel is to hear about the results of the PHEBUS FPT-0 Test on fission product release and transport in the reactor coolant system. This information will be pertinent to the evaluation of proposed severe accident source terms.

The Committee discussed the qualifications of candidates nominated for appointment to the ACRS. The Committee reviewed the current list of applicants. The Committee will continue to discuss qualifications of candidates nominated for appointment during the October meeting.

C. Future ACRS Activities

- The Committee agreed to schedule a briefing from the Office of Nuclear Reactor Research on stress corrosion cracking.

- During the session on the proposed Generic Letter on Digital Instrumentation and Control Systems Retrofits, Mr. Carroll asked for a staff briefing on the status of NRC research programs into the environmental qualification requirements for digital equipment.

D. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 414th ACRS Meeting, October 6-8, 1994, and future Subcommittee meetings.

The 413th ACRS meeting was adjourned at 3:00 p.m. on Saturday, September 10, 1994.

2120 L Street, NW., Washington, DC 20555, by the above date. Where petitions are filed during the last 10 days of the notice period, it is requested that the petitioner promptly so inform the Commission by a toll-free telephone call to Western Union at 1–(800) 248–5100 (in Missouri 1–(800) 342–6700). The Western Union operator should be given Datagram Identification Number N1023 and the following message addressed to Herbert N. Berkow: petitioner's name and telephone number, date petition was mailed, plant name, and publication date and page number of this **Federal Register** notice. A copy of the petition should also be sent to the Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to Mr. Arther H. Domby, Troutman Sanders, NationsBank Plaza, 600 Peachtree Street, NE., Atlanta, Georgia 30308, attorney for the licensee.

Nontimely filings of petitions for leave to intervene, amended petitions, supplemental petitions and/or requests for hearing will not be entertained absent a determination by the Commission, the presiding officer or the presiding Atomic Safety and Licensing Board that the petition and/or request should be granted based upon a balancing of the factors specified in 10 CFR 2.714(a)(1)(i)—(v) and 2.714(d).

For further details with respect to this action, see the application for amendments dated June 24, 1994, which is available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC 20555, and at the local public document room located at the Burke County Public Library, 412 Fourth Street, Waynesboro, Georgia 30830.

Dated at Rockville, Maryland, this 16th day of August, 1994.

For the Nuclear Regulatory Commission.

Louis Wheeler,

Project Manager, Project Directorate II–3, Division of Reactor Projects—I/II, Office of Nuclear Reactor Regulation.

[FR Doc. 94–20516 Filed 8–19–94; 8:45 am]

BILLING CODE 7590–01–M

Advisory Committee on Reactor Safeguards; Meeting Agenda

In accordance with the purposes of Sections 29 and 182b. of the Atomic Energy Act (42 U.S.C. 2039, 2232b), the Advisory Committee on Reactor Safeguards will hold a meeting on September 8–10, 1994, in Conference Room T2B3, 11545 Rockville Pike, Rockville, Maryland.

Thursday, September 8, 1994.

8:30 A.M.–8:45 A.M.: Opening Remarks by the ACRS Chairman (Open)—The ACRS Chairman will make opening remarks regarding conduct of the meeting and comment briefly regarding items of current interest. During this section, the Committee will discuss priorities for preparation of ACRS reports.

8:45 A.M.–9:45 A.M.: Proposed Generic Letter on Digital Instrumentation and Control (I&C) Systems Retrofits (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the proposed Generic Letter on Digital I&C Systems Retrofits. Representatives of the industry will participate, as appropriate.

9:45 A.M.–10:15 A.M. Proposed Generic Letter on Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the revised calculations for radiological consequences of main steamline break associated with a steam generator with degraded tubes.

10:30 A.M.–11:30 A.M.: Proposed Revisions to Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" (Open)—The Commitee will hear presentations by and hold discussions with representatives of the NRC staff and Nuclear Energy Institute (NEI) regarding the proposed revisions to Appendix J to 10 CFR Part 50.

11:30 AM–12:15 P.M.: Preparation for Meeting with the NRC Commissioners (Open)—The Committee will discuss items scheduled for discussion during the meetinng with the NRC Commissioners.

1:30 P.M.–3:00 P.M.: Meeting with the NRC Commissioners (Open)—The Committee will meet with the NRC Commissioners to discuss items of mutual interest.

3:15 P.M.–4:45 P.M.: Regulatory Analysis Guidelines (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the proposed final version of the Regulatory Analysis Guidelines document. Representatives of the industry will participate, as appropriate.

4:45 P.M.–5:30 P.M.: Report of the Planning and Procedures Subcommittee (Open/Closed)—The Committee will hear a report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business and internal organizational and personnel matters relating to the ACRS staff members.

A portion of this session may be closed to discuss matters that relate solely to internal personnel rules and practices of this Advisory Committee, and matters the release of which would constitute a clearly unwarranted invasion of personal privacy.

5:30 P.M.–6:30 P.M.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports on matters considered during this meeting.

Friday, September 9, 1994

8:30 A.M.–8:35 A.M.: Opening Remarks by the ACRS Chairman (Open)—The ACRS Chairman will make opening remarks regarding conduct of the meeting.

8:35 A.M.–10:15 A.M.: Proposed Final Version of NUREG–1465, "Accident Source Terms for Light-Water Nuclear Power Plants" (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the proposed final version of NUREG–1465. Representatives of the industry will participate.

10:30 A.M.–12:00 Noon: Vessel Head Penetration Cracking (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and NEI regarding the issues associated with the vessel head penetration cracking.

1:00 P.M.–2:00 P.M.: Generic Letter on Intergranular Stress Corrosion Cracking of Core Shrouds in BWR Plants (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the Generic Letter on Core Shroud Cracking in BWR Plants.

Representatives of the industry will participate, as appropriate.

2:00 P.M.–2:30 P.M.: Future ACRS Activities (Open)—The Committee will discuss topics proposed for consideration during future ACRS meetings.

2:30 P.M.–2:45 P.M.: Reconciliation of ACRS Comments and Recommendations (Open)—The Committee will discuss responses from the NRC Executive Director for Operations to ACRS comments and recommendations included in recent ACRS reports.

3:00 P.M.–4:30 P.M.: Selection of New ACRS Members (Open/Closed)—The Committee will discuss qualifications of candidates nominated for appointment to the ACRS.

A portion of this session will be closed to discuss matters the release of which would constitute a clearly

unwarranted invasion of personal privacy.

4:30 P.M.–6:30 P.M.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports on matters considered during this meeting.

Saturday, September 10, 1994

8:30 A.M.–11:30 A.M.: Preparation of ACRS Reports (Open)—The Committee will continue its discussion of proposed ACRS reports on matters considered during this meeting.

11:30 A.M.–12:00 Noon: Subcommittee Activities (Open)—The Committee will hear reports from cognizant Subcommittee Chairmen regarding the activities of Subcommittees.

12:00 Noon–12:30 P.M.: Miscellaneous (Open)—The Committee will discuss miscellaneous matters related to the conduct of Committee activities and complete discussions of topics that were not completed during previous meetings as time and availability of information permit.

Procedures for the conduct of and participation in ACRS meetings were published in the Federal Register on September 30, 1993 (58 FR 51118). In accordance with these procedures, oral or written statements may be presented by members of the public, electronic recordings will be permitted only during the open portions of the meeting, and questions may be asked only by members of the Committee, its consultants, and staff. Persons desiring to make oral statements should notify the ACRS Executive Director, Dr. John T. Larkins, at least five days before the meeting if possible, so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements. Use of still, motion picture, and television cameras during this meeting may be limited to selected portions of the meeting as determined by the Chairman. Information regarding the time to be set aside for this purpose may be obtained by contacting the ACRS Executive Director prior to the meeting. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the ACRS Executive Director if such rescheduling would result in major inconvenience.

I have determined in accordance with Subsection 10(d) P.L. 92–463 that it is necessary to close portions of this meeting noted above to discuss information that involves the internal personnel rules and practices of this advisory Committee per 5 U.S.C. 552b(c)(2); and to discuss information the release of which would constitute a clearly unwarranted invasion of personal privacy per 5 U.S.C. 552b(c)(6).

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by contacting the ACRS Executive Director, Dr. John T. Larkins (telephone 301–415–7361), between 7:30 A.M. and 4:15 P.M. EST.

Dated: August 16, 1994.

John C. Hoyle,

Acting Advisory Committee Management Officer.

[FR Doc. 94–20512 Filed 8–19–94; 8:45 am]

BILLING CODE 7590–01–M

Twenty-Second Water Reactor Safety Information Meeting

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of meeting.

SUMMARY: The Twenty-Second Water Reactor Safety Information Meeting will be held on October 24–26, 1994, 8:30 a.m. to 5:30 p.m., in the Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, Maryland 20814.

The annual Water Reactor Safety Information Meeting will focus on new and different work this year including High Burn-up Fuel Behavior. The meeting includes papers and discussions covering the status of research programs. The meeting is international in scope and includes participation by personnel from U.S. Government laboratories, various research firms and independent laboratories, reactor vendors, utilities, universities, and a number of foreign countries. This meeting is sponsored by the NRC and conducted by the Brookhaven National Laboratory.

The preliminary agenda for this year's meeting includes 12 sessions on the following topics: Severe Accident Research, Primary System Integrity, Structural and Seismic Engineering, Advanced Instrumentation and Control Hardware and Software, Aging Research, Products and Applications, Human Factors Research, Thermal Hydraulic Research for Advanced Passive Light Water Reactors, Individual Plant Examination and Probabilistic Risk Assessment and High Burn-Up Fuel Behavior. Mr. James M. Taylor, Executive Director of Operations for NRC will open the meeting and Mr. Pierre Tanguy, Inspector General of Electricite de France will be the guest speaker.

Attendees may register at the meeting or may register in advance by contacting Susan Monteleone, Brookhaven National Laboratory, Department of Nuclear Energy, Building 130, Upton, NY 11973, Telephone (516) 282–7235, or Christine Bonsby, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 415–5838.

Dated at Rockville, Maryland, this 15th day of August, 1994.

For the Nuclear Regulatory Commission.

Alois J. Bunda,

Deputy Director, Financial Management, Procurement and Administration Staff, Office of Nuclear Regulatory Research.

[FR Doc. 94–20517 Filed 8–19–94; 8:45 am]

BILLING CODE 7590–01–M

OFFICE OF MANAGEMENT AND BUDGET

Budget Analysis Branch; Sequestration Update Report

AGENCY: Office of Management and Budget.

ACTION: Notice of Transmittal of Sequestration Update Report to the President and Congress.

SUMMARY: Pursuant to Section 254(b) of the Balanced Budget and Emergency Deficit Control Act of 1985, as amended, the Office of Management and Budget hereby reports that it has submitted its Sequestration Update Report to the President, the Speaker of the House of Representatives, and the President of the Senate.

FOR FURTHER INFORMATION CONTACT:

Anita Chellaraj, Budget Analysis Branch—202/395–3945.

Dated: August 15, 1994.

John B. Arthur,

Assistant Director for Administration.

[FR Doc. 94–20561 Filed 8–19–94; 8:45 am]

BILLING CODE 3110–01–M

APPENDIX II

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

August 22, 1994

SCHEDULE AND OUTLINE FOR DISCUSSION
413TH ACRS MEETING
September 8-10, 1994

Thursday, September 8, 1994, Conference Room 2B3, Two White Flint North, Rockville, Maryland

1) 8:30 - 8:45 A.M.

Opening Remarks by the ACRS Chairman (Open)
1.1) Opening Statement (TSK/SD)
1.2) Items of Current Interest (TSK/JTL/SD)
1.3) Priorities for Preparation of ACRS Reports (TSK/SD)

2) 8:45 - 9:30 A.M.

Proposed Generic Letter on Digital Instrumentation and Control (I&C) Systems Retrofits (Open) (WJS/DHC)
2.1) Remarks by the Subcommittee Chairman
2.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed Generic Letter on Digital I&C Systems Retrofits.

Representatives of the Nuclear Energy Institute (NEI) will participate, as appropriate

3) 9:30 - 10:15 A.M.

Proposed Generic Letter on Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes (Open) (WJS/NFD)
3.1) Remarks by the Subcommittee Chairman
3.2) Briefing by and discussions with representatives of the NRC staff regarding the revised calculations for radiological consequences of main steamline break associated with degraded steam generator tubes

10:15 - 10:30 A.M. BREAK

[= Transcribed portion of meeting

4) 10:30 - 11:~~30~~ 45 A.M.

Proposed Revisions to Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" (Open) (PRD/MDH)

4.1) Remarks by the Subcommittee Chairman

4.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed revisions to Appendix J to 10 CFR Part 50

Representatives of the industry will participate, as appropriate

5) 11:~~30~~ 45 - 12:15 P.M.

Preparation for Meeting with the NRC Commissioners (Open) (TSK, et al./JTL, et al.)
Discussion of the items scheduled for the meeting with the NRC Commissioners

12:15 - 1:15 P.M. LUNCH

6) 1:30 - 3:00 P.M.

Meeting with the NRC Commissioners (Open)
Meeting with the NRC Commissioners to discuss items of mutual interest

3:00 - 3:15 P.M. BREAK

7) 3:15 - 4:~~45~~ 10 P.M.

Regulatory Analysis Guidelines (Open) (TSK/MDH/MME)

7.1) Remarks by the Subcommittee chairman

7.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed final version of the Regulatory Analysis Guidelines Document

4:10 - 4:25 P.M. Break

Representatives of the industry will participate, as appropriate

8) 4:~~45~~ 25 - 5:30 P.M.

Report of the Planning and Procedures Subcommittee (Open/~~Closed~~) (TSK/JTL)
Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, and organizational and personnel matters relating to ACRS staff members.

(Note: A portion of this session may be closed to discuss organizational and personnel matters that relate solely to the internal personnel rules and practices of this advisory Committee, and matters the release

of which would constitute a clearly unwarranted invasion of personal privacy.)

9) 5:30 - 6:~~30~~ 25 P.M. Preparation of ACRS Reports (Open)
Discussion of proposed ACRS reports on:
9.1) Proposed Generic Letter on Digital Instrumentation and Control Systems Retrofits (WJS/DHC)
9.2) Proposed Generic Letter on Voltage-Based Repair Criteria for Westinghouse Stesm Generator Tubes (WJS/NFD)
9.3) Proposed Revisions to Appendix J to 10 CFR Part 50 (PRD/MDH)

Friday, September 9, 1994, Conference Room 2B3, Two White Flint North, Rockville, Maryland

10) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (TSK/SD)

11) 8:35 - 10:~~15~~ 35 A.M. Proposed Final Version of NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants" (Open) (DAP/MDH)
11.1) Remarks by the Acting Subcommittee Chairman
11.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed final version of NUREG-1465

Representatives of the industry will participate

10:~~15~~ 35 - 10:~~30~~ 55 A.M. BREAK

12) 10:~~30~~ 55 - 12:~~00~~ 15 Noon Vessel Head Penetration Cracking (Open) (WJS/NFD)
12.1) Remarks by the Subcommittee Chairman
12.2) Briefing by and discussions with representatives of the NRC staff and NEI regarding the issues associated with the reactor vessel head penetration cracking

12:~~00~~ 15 - 1:~~00~~ 15 P.M. LUNCH

13) 1:~~00~~ 15 - 2:~~00~~ 20 P.M. Generic Letter on Intergranular Stress Corrosion Cracking of Core Shrouds in BWR Plants (Open) (WJS/NFD)

13.1) Remarks by the Subcommittee Chairman

13.2) Briefing by and discussions with representatives of the NRC staff and the BWR Owner's Group regarding the Generic Letter on Core Shroud Cracking in BWR Plants

14) 2:~~00~~ 20 - ~~2:30~~ 3:05 P.M. Future ACRS Activities (Open) (TSK/SD)
Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future meetings

Representatives of the industry will participate, as appropriate

15) ~~2:30~~ 3:05 - ~~2:45~~ 3:10 P.M. Reconciliation of ACRS Comments and Recommendations (Open) (TSK, et al./SD., et al.)
Discussion of responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports

~~2:45~~ 3:10 - 3:~~00~~ 35 P.M. BREAK

16) 3:~~00~~ 35 - 4:30 P.M. Selection of New ACRS Members (~~Open~~/Closed)

16.1) Remarks by the ACRS Chairman

16.2) Discussion of qualifications of candidates nominated for appointment to the ACRS

(Note: A portion of this session may be closed to discuss matters the release of which would constitute a clearly unwarranted invasion of personal privacy.)

17) 4:30 - 6:~~30~~ 10 P.M. Preparation of ACRS Reports (Open)
Discussion of proposed ACRS reports on:

17.1) Regulatory Analysis Guidelines (TSK/MDH/MME)

17.2) NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants" (DAP/MDH)

17.3) Proposed Generic Letter on Digital Instrumentation and Control Systems Retrofits (WJS/DHC)

17.4) Proposed Generic Letter on Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes (WJS/NFD)

17.5) Proposed Revisions to Appendix J to 10 CFR Part 50 (PRD/MDH)

Saturday, September 10, 1994, Conference Room 2B3, Two White Flint North, Rockville, Maryland

18) 8:~~30~~ 45 - ~~11:30 A.M.~~ 3:00 P.M. Preparation of ACRS Reports (Open)
Continue discussion of the proposed ACRS reports listed under Item 17

19) 11:30 - 12:00 Noon Subcommittee Activities (Open) (IC/PAB)

19.1) Report by cognizant Subcommittee Chairman regarding the August 24-26, 1994 ACRS Subcommittee meeting on Thermal Hydraulic Phenomena

19.2) Miscellaneous (Open) (TSK/JTL)
Complete discussion of matters considered during this meeting and matters considered but not completed during previous meetings as time and availability of information permit

NOTE:

- **Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.**
- **Number of copies of the presentation materials to be provided to the ACRS - 35.**

APPENDIX III: MEETING ATTENDEES

413TH ACRS MEETING
SEPTEMBER 8-10, 1994

NRC STAFF

B. Burson	RES	J. Medoff	NRR
C. Craig	NRR	W. Norris	RES
C. Doutt	NRR	J. Ridgely	RES
R. Emch	NRR	C. Rourk	RES
C. Ferrell	RES	M. Rubin	NRR
E. Hackett	NRR	C. Shu	AEOD
P. Loeser	NRR	M. Taylor	OEDO
J. Mazetis	RES	C. Thomas	NRR
M. McNeil	RES	J. Wermiel	NRR

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

D. Bemis	Consumers Power Co. (NEI)
C. Callaway	NEI
J. Cannon	Arizona Public Service
L. Connor	STS, Inc.
K. Cozens	NEI
R. Dyer	Southern Nuclear/BWROG
J. Eaton	NEI
R. Fairfield	GE
R. Fink	MPR Associates
S. Fyfitch	B&W Nuclear Technologies
J. Giselien	EPRI
J. Glake	CECo
M. Hutcheson	Duke Power Co.
M. Jennex	Southern California Edison
J. Juliano	NUS
D. Korosec	SNSA
L. Lake	PSE&G
J. Lang	EPRI
M. Lyster	CONED/BWROG
L. Motley	FP&L
R. Ng	NEI
P. Nientel	PS&E
T. Pietrangelo	NEI
J. Raleigh	Southern Technical Services
M. Scarston	COMED
M. Stella	Dames & Moore
R. Stonum	Con. Edison
T. Sutter	Bechtel
J. Trotter	Polester Applied Technology
K. Unnerstall	Newman, Bouknight & Edgar
D. Vojnorio	SNSA
D. Whitaker	Duke Power Co.
H. Yasni	Tokyo Electric Power Co.

APPENDIX IV: FUTURE AGENDA

414th ACRS Meeting, October 6-8, 1994, Rockville, Maryland. During this meeting, the Committee plans to consider the following:

NRC Test Programs in Support of the AP600 and SBWR Design Certification (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the management and status of the NRC test programs being conducted at the ROSA-V and PUMA test facilities. Representatives of the industry will participate, as appropriate.

Proposed Revision 2 to Regulatory Guide 1.82, Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the proposed Revision 2 to Regulatory Guide 1.82. Representatives of the industry will participate, as appropriate.

Reactor Vessel Structural Integrity (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding materials data acquisition associated with reactor vessel structural integrity. Representatives of the industry will participate, as appropriate.

Meeting With the Director of the Office for Evaluation of Operational Data (AEOD) (Open) - The Committee will meet with the Director of AEOD to discuss items of mutual interest, including the NRC Technical Training Program.

Rod Control System Single Failure Potential (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the rod control system single failure event at Salem Unit 2, the findings of the Augmented Inspection Team (AIT), licensee responses to Generic Letter 93-04, and the staff's actions. Representatives of the industry will participate, as appropriate.

IPE Insights Program (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the IPE Insights Program.

Reconciliation of ACRS Comments and Recommendations (Open) - The Committee will discuss responses from the NRC Executive Director for Operations to ACRS comments and recommendations included in recent ACRS reports.

Selection of New ACRS Members (Open/Closed) - The Committee will discuss qualifications of candidates nominated for appointment to the ACRS.

Strategic Planning (Open) - The Committee will hold strategic planning discussions related to its future activities.

New Research Needs (Open) - The Committee will discuss any new research needs identified during this meeting.

Miscellaneous (Open) - The Committee will discuss miscellaneous matters related to the conduct of Committee activities and complete discussions of topics that were not completed during previous meetings as time and availability of information permit.

APPENDIX V
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
1	Opening Remarks by the ACRS Chairman
	1. Memorandum to ACRS Members from Steve Mays, Senior ACRS Fellow, dated September 1, 1994, regarding Rationale for Regulation [For Internal Committee Use Only]
2	Proposed Generic Letter on Digital Instrumentation and Control (I&C) Systems Retrofits
	2. Proposed Generic Letter Endorsing NUMARC/EPRI Report TR-102348, "Guideline on Licensing Digital Upgrades," Paul J. Loeser, Instrumentation and Controls Branch, dated September 8, 1994 [Viewgraphs]
3	Proposed Generic Letter on Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes
	3. Memorandum to W.T. Shack from T.S. Kress, dated September 6, 1994, regarding Additional Contribution on Iodine Spiking
	4. ACRS Followup Briefing on Radiation Protection Perspective on Steam Generator Generic Letter on Alternate Repair Criteria (ARC), dated September 8, 1994, Thomas Essig, Radiation Protection Branch, NRR [Viewgraphs]
4	Proposed Revisions to Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors"
	5. Performance-Oriented Containment Leak-Test Requirements, dated September 8, 1994, Moni Dey [Viewgraphs]
	6. Memorandum for P. Davis from W. Kerr, ACRS Consultant, dated September 7, 1994, regarding Comments Concerning Subcommittee Meeting on September 7, 1994 - Proposed Revisions to Appendix J [For Internal Committee Use Only]
	7. NEI Presentation on Industry Implementation Guideline for Performance-Based Containment Leak Testing, dated September 8, 1994 [Viewgraphs]
	8. Issue #1: Technical Specifications, undated [Viewgraphs]
5	Preparation for Meeting with the NRC Commissioners
	9. Meeting with the NRC Commissioners on September 8, 1994 [Handout #6.1]

7 Regulatory Analysis Guidelines

10. RES Staff Presentation to the ACRS on the Regulatory Analysis Guidelines by Division of Regulatory Applications, dated September 8, 1994 [Viewgraphs]

8 Report of the Planning and Procedures Subcommittee

11. Final Draft Minutes of the Planning and Procedures Subcommittee Meeting - September 7, 1994 [Handout #8.1]

10 Opening Remarks by the ACRS Chairman

12. Memorandum to T.S. Kress from J.T. Larkins, ACRS Executive Director, dated June 13, 1994, regarding Senior Panel Session on the Use of Risk Assessment in Regulation, with attachment

11 Proposed Final Version of NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants"

13. Safety Concerns Associated with Unrealistic Accident Source Term Timing Assumptions by Ray Crandall, Northeast Utilities, dated September 9, 1994 [Viewgraphs]
14. Proposed Final NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants," Leonard Soffer, RES, dated September 9, 1994 [Viewgraphs]
15. Memorandum to ACRS Members from Rick Sherry, Senior ACRS Fellow, dated September 8, 1994, regarding Preliminary Review of Final Draft of NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants" [For Internal ACRS Use Only]
16. Memorandum to the Commissioners from James M. Taylor, EDO, dated September 6, 1994, regarding Use of NUREG-1465 Source Term at Operating Reactors, with attachment

12 Vessel Head Penetration Cracking

17. NRC Staff Presentation to the ACRS on Control Rod Drive Mechanism Penetration Cracking in Domestic PWR's, dated September 9, 1994 [Viewgraphs]
18. An Integrated Industry Approach to the Issue of Head Penetration Cracking, Warren Bamford, Westinghouse, Nuclear Energy Institute, undated [Viewgraphs]

13 Generic Letter on Intergranular Stress Corrosion Cracking of Core Shrouds in BWR Plants

9. Core Shroud and RPV Internals, Mike Lyster and Robin Dyle, dated September 9, 1994 [Viewgraphs]
20. Generic Letter 94-03 Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors, Edwin M. Hackett, NRR, dated September 9, 1994 [Viewgraphs]

14 Future ACRS Activities

21. Future ACRS Activities - 414th ACRS Meeting, October 6-8, 1994 [Handout #14.1]

15 Reconciliation of ACRS Comments and Recommendations

22. Reconciliation of ACRS Comments and Recommendations [Handout #15.1]

MEETING NOTEBOOK CONTENTS

TAB	DOCUMENTS
2	Proposed Generic Letter on Digital Instrumentation and Control (I&C) System Retrofits
	1. Table of Contents
	2. Tentative Agenda
	3. Status Report
	4. Memorandum to Edward Jordan, Chairman, Committee to Review Generic Requirements, from Frank Miraglia, NRR, dated August 9, 1994, regarding Proposed Generic Letter - Use of NUMARC/EPRI Report TR-102348, "Guideline on Licensing Digital Upgrades," in Determining the Acceptability of Performing Analog-to-Digital Replacements Under 10 CFR 50.59, with enclosures
	5. Letter to William Russell, NRR, from William Rasin, NUMARC, dated December 22, 1993, re EPRI Report TR-102348, "Guideline on Licensing Digital Upgrades," with enclosure
3	Proposed Generic Letter on Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes
	6. Table of Contents
	7. Tentative Agenda
	8. Status Report
	9. Memorandum to John Larkins, ACRS Executive Director, from James Taylor, EDO, dated July 14, 1994, regarding ACRS Review of Proposed Generic Letter 94-XX, Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes, with enclosure
	10. Memorandum to John Larkins, ACRS Executive Director, from Jose Calvo, Acting Director, Division of Radiation Safety and Safeguards, dated August 17, 1994, regarding Revisions to Slides Used by Staff During August 3, 1994, Subcommittee Briefing on Steam Generator Alternate Repair Criteria, without enclosures
4	Proposed Revisions to Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors"
	11. Table of Contents
	12. Tentative Agenda
	13. Status Report
	14. Memorandum to John Larkins, ACRS Executive Director, from Joseph Murphy, Acting Director, Division of Safety Issue Resolution, NRR, dated August 23, 1994, regarding

12 Vessel Head Penetration Cracking

32. Table of Contents
33. Tentative Agenda
34. Status Report
35. Memorandum to Fames Richardson, Director, Division of Engineering, from Jack Strosnider, Chief, Materials and Chemical Engineering Branch, dated December 2, 1992, regarding Summary of Meeting with NUMARC and PWR Owners Groups Concerning Primary Water Stress Corrosion Cracking of Control Rod Drive Penetrations at Reactor Vessel Head

13 Generic Letter on Intergranular Stress Corrosion Cracking of Core Shrouds in BWR Plants

36. Table of Contents
37. Tentative Agenda
38. Status Report
39. Memorandum to John Larkins, ACRS Executive Director, from Brian Sheron, Director, Division of Engineering, dated August 2, 1994, regarding ACRS Briefing on Core Shroud Cracking
40. NRC Generic Letter 94-03: Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors, dated July 25, 1994 [9407210200]

Performance-Based Containment Leakage Test Rulemaking, with enclosure [For Internal Use Only]

15. Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J, Draft Revision C, NEI 94-01, August 1, 1994
16. Current Version of 10 CFR Part 50, Appendix J
17. SECY-94-090, dated March 31, 1994, "Institutionalization of Continuing program for regulatory Improvement [For Internal Use Only]
18. ACRS Report to Chairman Carr, dated May 17, 1991, regarding Proposed Final Revision to Appendix J to 10 CFR Part 50 and Related Final Regulatory Guide

7 Regulatory Analysis Guidelines

19. Table of Contents
20. Tentative Agenda
21. Status Report
22. ACRS Report to James Taylor, EDO, dated November 12, 1992, regarding Revised Regulatory Analysis Guidelines
23. Letter to Paul Shewmon, ACRS Chairman, from James Taylor, EDO, dated February 19, 1993, regarding Revised Regulatory Analysis Guidelines. with enclosures
24. Letter to Thomas Kress, ACRS Chairman, from J. Heltemes, Deputy Director, NRR, dated June 29, 1994, regarding Draft SECY Paper, Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission, with enclosure [Fore Internal Use Only]

11 Proposed Final Version of NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants"

25. Table of Contents
26. Tentative Agenda
27. Status Report
28. ACRS Reports (6) Regarding Source Term Issues
29. Memorandum to John Larkins, ACRS Executive Director, from Themis Speis, RES Deputy Director, dated August 5, 1994, regarding ACRS Review of Proposed Final NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants, with enclosure
30. Letter to William Russell, NRR Director, from R.P. McDonald, Electric Power Research Institute, dated March 17, 1994, regarding Draft Commission Paper "Source Term Related Technical and Licensing Issues Pertaining to Evolutionary and Passive Light-Water-Reactor Designs," with enclosure
31. Letter to William Russell, NRR Director, from J. Opeka, Northeast Utilities System, dated April 29, 1994, regarding Accident Source Term Timing Assumptions [9405100121]

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

- - - -

PERIODIC MEETING WITH THE ADVISORY

COMMITTEE ON REACTOR SAFEGUARDS

- - - -

PUBLIC MEETING

Nuclear Regulatory Commission

One White Flint North

Rockville, Maryland

Thursday, September 8, 1994

The Commission met in open session, pursuant to notice, at 1:30 p.m., Ivan Selin, Chairman, presiding.

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission

KENNETH C. ROGERS, Commissioner

E. GAIL de PLANQUE, Commissioner

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

KAREN D. CYR, General Counsel
JOHN C. HOYLE, Acting Secretary
DR. THOMAS S. KRESS, Chairman, ACRS
DR. IVAN CATTON, Member, ACRS
JAMES C. CARROLL, Member, ACRS
CHARLES J. WYLIE, Member, ACRS
WILLIAM LINDBLAD, Member, ACRS
DR. WILLIAM J. SHACK, Member, ACRS
CARLYLE MICHELSON, Member, ACRS

PROCEEDINGS

[1:30 p.m.]

CHAIRMAN SELIN: Good afternoon, ladies and gentlemen.

The Commission is pleased to welcome once again the Advisory Committee on Reactor Safeguards to brief us on items of mutual interest. This Committee provides an invaluable service to us by giving us independent advice on safety aspects that are proposed in the existing nuclear facilities. Therefore, the Committee's activities are important to us in helping to solve technical problems in licensing and regulation and also sometimes just to give us an overview of things that we may sometimes miss from being so much tied in with the day to day activities.

So, today we are pleased to hear your views, Doctor Kress, on a wide range of issues.

I understand copies of the Committee's letters to the Commission on today's topics are available at the entrance to the room.

Commissions?

The floor is yours, Doctor Kress.

DR. KRESS: Thank you very much for those kind words. We find these meetings very valuable to us as a feedback mechanism to see what you're most interested in.

Before we start, I would like to note that we have

a new Committee member that this is his first meeting with the Commissioners, Doctor Dana Powers. I'd like to introduce him.

CHAIRMAN SELIN: Welcome, Doctor.

DR. KRESS: You probably know him.

With that, I won't spend too much time in small talk introduction. I'll go right to the agenda since we are limited in time.

The first item has to do with our reviews of the passive plant designs. Most of the activities we've had have involved the Thermal Hydraulic Subcommittee and the thermal hydraulics issues, so we'll turn it over directly to Ivan Catton and let him give you a status report.

DR. CATTON: Thank you. I'm not quite going to follow the order that's on the paper in front of you.

CHAIRMAN SELIN: Why am I not amazed to hear that?

DR. CATTON: Well, see, I didn't put it together. I would have arranged it differently.

In any event, both Westinghouse and GE need to have computational tools that predict the behavior of their reactors with reasonable assurance that the uncertainties are known. To accomplish this they have various test programs and they're composed of small scale separate effects tests as well as some integral test systems.

The purpose of these regs is to generate the data

they need to confirm the quality of their computational tools. What this does is it leads you to the generic question of scaling of large complex thermal hydraulic systems. As near as I can tell at this point, neither the vendors nor the staff with their two programs have completed the task. There's still pieces left out.

We actually started looking into the test programs I guess almost two years ago. During that period, both have come a long way. We felt several subcommittee meetings and I first will talk a little bit about the simplified boiling water reactor.

We met last week on August 24th to review the new GE plan for test and analysis programs. I think their presentation reflected sincere planning. They've done a good job in demonstrating how the various phases of a LOCA are covered with their test facilities. We had a number of comments about the completeness of what they're doing. Primarily it's their scaling analysis and, although a good start, it's still incomplete. In particular, attention needs to be given to parallel flow paths and their dynamics. You've got a lot of tanks that are connected together with pipes and these things. You need to be sure that they're going to behave in the proper way so that you get the information you need to qualify your codes.

In this area there is an RES program that includes

the PUMA facility at Purdue and a version of RELAP5 that's dedicated to BWR modeling. The purpose of the PUMA facility is to obtain -- and I don't know what PUMA stands for, but it's to obtain confirmatory data for the assessment of important SBWR-specific phenomena. Scaling was a major part of the presentation and this subcommittee meeting was on August 26th.

An enormous effort went into what is called bottom-up scaling. You sort of work your way around in the bottom and look at rentals numbers and so forth. But there was not the top down scaling which allows you to decide what is important. We felt that if you don't do that, you're going to become overwhelmed by detail and you never get the problem straightened out.

We're not happy or were not happy with how the overall program leading to a computational tool with known uncertainties was structured, but we've been assured that we will be when they present it to us at our October meeting. At that time we will write a letter.

CHAIRMAN SELIN: Would you repeat that last sentence? You were not happy with --

DR. CATTON: We were not happy with the way the program was structured. See, your focus needs to be this code that you're going to use to predict the behavior of the AP -- well, in this case the SBWR, but also the AP600.

Somehow to have an experimental program that is already sort of underway, granted they will probably scale it right, you still haven't really evaluated the needs of your code. In our view, you need some kind of a structure over this that's putting all of the pieces together because you may find that you don't necessarily want to run a particular experiment because it won't teach you much that you need for the code. You may want to do something that doesn't quite look like the reactor because you're scaling tells you this is what you need. That part of it was missing, the sort of integration.

MR. CARROLL: You also said something about a future meeting and a report.

DR. CATTON: Yes. With respect to the RES program, there will be a presentation to the full Committee in October and that will cover their program plan and at that time we will comment on it. We also plan to have a further meeting with GE. They indicated that they had taken a lot of our comments to heart and that they would come back and that they would work with us to get it squared away.

Since we last discussed the AP-600 with you, and I think that's quite awhile ago, we've met with Westinghouse twice and we also had a recent meeting on the ROSA facility. We met with Westinghouse last March to discuss their separate effects test. This is where they look at their

core CMT. I don't remember what the M stands for, and their -- core makeup tank and their PCCS, which is the passive containment cooling system. We weren't too happy with their program. The PCCS test program was to generate data that would confirm their containment analysis tools. Unfortunately, the testing is completed before any attempt at scaling is carried out. So, it wasn't clear to us that the test was run with the right set of conditions.

A lot of work was noted that had just begun and we were very happy to hear that the reg. had been mothballed so that if scaling analysis led them to conclude more testing was needed, they could do it. And I think the staff people who were there with us at the time sort of agreed with our perception of the program.

COMMISSIONER ROGERS: What test rig was that again?

DR. CATTON: The passive containment cooling system. It's sort of a hemisphere set out in a field somewhere and they pour water on the top of it and dump steam inside. The concern was the water flow on the outside of it may not have been appropriate for the test. There were a number of questions, detailed questions like that that came up and we were assured that they were going to look into them and that we would meet when they were ready. I believe they have contacted the ACRS office to try to

schedule a meeting. So, it should be soon.

The CMT also suffers from a lack of scaling analysis. But in the case of the CMT, there are a number of them. They have a tall skinny one with the facility in Italy. They have the separate effects tests at Westinghouse. They have a short fat one at Oregon State and you also have the ROSA facility. So, there's a wide band of scales and I think that if they do an analysis and they come up with the proper kinds of initial conditions, they can run the hell out of these things and then they can be sure that their codes will do the job.

Westinghouse made a large number of commitments. I just recently looked through the minutes and they go on and on. I haven't received any of them and it was last March, but I assume we will one of these days.

CHAIRMAN SELIN: Doctor Catton, your remarks leave me a little bit puzzled. You're saying if they do these tests with the right initial conditions --

DR. CATTON: Well, see, initial conditions is key.

CHAIRMAN SELIN: I understand that. That's not what --

DR. CATTON: Okay.

CHAIRMAN SELIN: What I'm missing is are you neutral as to whether they're going to do this? Do you believe they will do this with the right conditions? Are

you skeptical that they'll do them with the right -- what are you telling us about what you expect them to tell us?

DR. CATTON: I haven't seen anything that they have put in writing. I've heard a lot of probablys and maybes. So that's why I'm not being too positive about it. In one respect, we're really not sure what those initial conditions should be. You need to do this kind of a scaling analysis to tell you what they should be. Once you've got them, you can exercise the facilities against them and then practice with your code.

I don't really see this happening. When you ask Westinghouse whether or not they're going to do calculations of ROSA, they don't say yes. They don't say no, but they don't say yes. So, I'm just not sure.

CHAIRMAN SELIN: So, you give me the impression -- my impression is you're saying there's a range of facilities which could support a good test program.

DR. CATTON: Yes.

CHAIRMAN SELIN: But you haven't seen a good test program yet.

DR. CATTON: That's right.

CHAIRMAN SELIN: Okay.

DR. CATTON: I haven't seen everything put together yet.

COMMISSIONER ROGERS: Excuse me. On that last

point though. Westinghouse hasn't said they'll do ROSA calculations.

DR. CATTON: No.

COMMISSIONER ROGERS: But we've said we'll do ROSA calculations, isn't that right?

DR. CATTON: Yes.

COMMISSIONER ROGERS: So they are being done. It's just that they are going to be done, but they're not going to be done necessarily by Westinghouse. Is that right?

CHAIRMAN SELIN: They have to be done --

DR. CATTON: Well, but you see, the code that you have to depend on is the Westinghouse computer code, not your own. Your own is a separate issue. If Westinghouse --

COMMISSIONER ROGERS: Well, the code that's being used the analyze the ROSA experiments right now.

DR. CATTON: That particular code is RELAP5.

COMMISSIONER ROGERS: Right.

DR. CATTON: That's an NRC code.

COMMISSIONER ROGERS: Right. Now, those calculations are being done.

DR. CATTON: Calculations are being done, that's correct.

COMMISSIONER ROGERS: But you don't have a

commitment or nobody's got a commitment from Westinghouse saying, "We'll use their code on the ROSA facility results?"

DR. CATTON: That's correct.

MR. CARROLL: Your point, Ivan, is that it's their code that's going to be the licensing basis for the plant.

DR. CATTON: That's right.

MR. CARROLL: RELAP5 is simply confirmatory.

DR. CATTON: And the system is complex. There's lots of pipes hooked together and levels move up and down and I guess there was even one case with ROSA where the CMT started to drain, then stop and sat there for an hour before it started to drain again. Well, this may well be due to the atypicalities of the ROSA facility, but on the other hand it may not. I think what you buy is the necessity to explain it and to show that you can indeed calculate it. What this leads you to I think is a much more robust code when you're done, but it may be pain that you well could have done without.

We met with Westinghouse on their COBRA/TRAC program and we had the usual complaints about the codes. But for the most part it's my belief that it's acceptable to begin their validation process. Our primary concern when we met with them was how they're going to treat uncertainty in the predictions. What Westinghouse wanted to do was just to sort of lump everything into a square root of the sum of the

squares and they would actually look at data across the channel where temperatures are higher and temperatures are low and sort of treat everything that wasn't on the mean as an uncertainty. That's not an uncertainty. Those measurements are repeatable, they're not uncertainties.

We had a lot of argument about that and no agreement when we left. To me, other than the comparisons with the actual test facilities, that's the biggest hurdle to get over, is to convince them that indeed they have to treat that as a variable.

With Westinghouse we really found no show stoppers, but I think there's a lot of work that still has to be done.

CHAIRMAN SELIN: Would you care to speculate as to how much -- how the work that has to be done compares with the schedule that we're trying to carry out?

DR. CATTON: No, because what happens is we had the meeting, then we don't hear from them for a long time. I know they're running the OSU facility practically day and night, but we have yet to see any of the data. I understand that Research has some of the data, but I haven't had an opportunity to talk to them. So, I just don't know.

On the 25th, we reviewed the NRC research program at ROSA and it was at that meeting we came to the conclusion that the really -- again, much like when it was not a

systematic research program, the focus is really not on the code and its uncertainties. They're not, at least that we could tell, are not meshed well enough. Again, we were assured that this will be remedied and that we're going to be told about it at our October meeting.

There are some interesting preliminary results from ROSA. The strongly coupled dynamic interacting components shows in the recent tests, particularly the hang-up of the CMT.

I guess to close, we'll be writing a letter on the RES program, both PUMA and ROSA, following a meeting with them at our October meeting.

COMMISSIONER ROGERS: Yes, before you leave the ROSA topic, some time ago you expressed great concerns about the ROSA facility being adequate.

DR. CATTON: Yes.

COMMISSIONER ROGERS: Not modeling the AP600 design, many features that you described in detail that were different and so on. The question in my mind is to what extent if the NRC RELAP code, in fact, does predict the results, the experimental results from the ROSA rig, whether the difference then of the ROSA rig from the AP600 design is a scaling issue. In other words, would that be a scaling concern, that difference? Could they adjust the RELAP code to correct for the differences between whatever is in it

that makes it work very well for ROSA but is inappropriate for the AP600 detail design?

DR. CATTON: I think what you -- I'm not quite sure how to address the question, so let me try to just give you an answer and if I don't hit on it, we can try again.

The ROSA is different and it has atypicalities.

COMMISSIONER ROGERS: Right.

DR. CATTON: Right now today we don't know, or at least I don't know and haven't been shown, how that behavior compares with the AP600 or how I get from one to the other. So, you have to use the code to bridge the gap. Now, you've got SPES, OSU and ROSA, and somehow you have to show, and this is what you do with the scaling, that you're going to capture everything you need into that code that you're going to exercise against these different facilities to convince people that when you predict AP600 the predictions are meaningful. If you just practice against ROSA, that's not going to do it because what happens is that you'll wind up adjusting a nodalization or something will happen and you get good predictions. You need to know why you got good predictions.

COMMISSIONER ROGERS: Yes, absolutely.

DR. CATTON: And then you need to go to the other facilities and they all have different kinds of problems. Although some of my colleagues on my subcommittee don't

agree with me, my feeling is that if you did a damn good job of predicting all three without really changing the code in any way, I would feel reasonably comfortable with the prediction of AP600. But you haven't proven it until you do the scaling.

COMMISSIONER ROGERS: That would be wonderful if it turned out that way, but I'd be surprised, just offhand, whether that code without some adjustments could, in fact, deal with those very different scale --

DR. CATTON: If you can't deal with those three facilities, then how do you say anything about your prediction to the behavior of the AP600? You can't. You have to know what's going on in order to make this kind of a prediction and that's a problem. Fortunately, I think the OSU facility is well scaled, but there's still this problem.

By the way, the OSU scaling report doesn't deal with this top down either, but we have been assured that they will. That will help you better come to grips with initial conditions because you can do things with it. You could change how you run your experiment on OSU in order to capture other phenomena if you know what you're looking for.

COMMISSIONER ROGERS: Yes.

DR. CATTON: This is the piece that's still missing.

COMMISSIONER ROGERS: Do you see -- well, you've

been told --

DR. CATTON: We're headed in the right direction.

COMMISSIONER ROGERS: Yes. Do you see a clear set of steps that could be taken to take care of that?

DR. CATTON: Yes.

COMMISSIONER ROGERS: Yes.

DR. CATTON: The first thing you need to do is to complete the scaling and I think this needs to be done for ROSA. Now, we've been told that it was done for ROSA, but they didn't put the things together right for us and so forth and it may well be true. But it needs to be done for all of the facilities so that you can begin to look at the results of this effort and then compared with what you have for AP600.

See, one of the difficulties, I think, is that we're educated to use a different approach, to start with the detailance or to work our way up. Well, if it's a simple problem like a pipe and a Reynolds number, that's not a problem. But when you have this complex system and you've got different heights to worry about, different diameters, different kinds of processes and things that don't scale, because after all you're using the same fluid in all scales. So, some of the thermal physical properties don't change and you have a problem with that, and you sort of have to figure out how to put it together and that's foreign to a lot of

engineers. We learn to come from the other direction.

COMMISSIONER ROGERS: Okay. Thank you.

DR. KRESS: Okay? Thank you, Ivan.

The next topic comes out of our reviews of the evolutionary plant designs. In the process of our reviews, we asked a lot of questions and got a lot of answers that left us with some items that, although they were fixed to our satisfaction for the evolution plants, we think there still are some lessons learned and William Lindblad is our leader on this one.

MR. LINDBLAD: Thank you.

As Doctor Kress was saying, yes, in July, upon completion of ABWR and System 80+ reviews by the Committee, and after the letters were written on those two projects, the Committee sat and talked about what might we bring to the attention of the staff. So, in July, we wrote to the Executive Director a letter identifying seven items that we thought he might want to have his staff give consideration to how operating nuclear plants were handling the same issues or how their review of future projects might one look at it as well.

We suggested that there was no particular way these items might be addressed. He might address them as a research item or as a change to the standard review plan or consider them and decide they need not be given any greater

attention than that. We have not yet heard back from Mr. Taylor on this and so, while it's accepted, we expect to hear momentarily how he intends to deal with our suggestions. If you have any questions about clarifying some of the items, we'd be pleased to attempt to do that. But we really can't tell you much more than that.

CHAIRMAN SELIN: I had a question different from the items, but from the overall process as opposed to what we've learned about designs. Did you end up with strong feelings one way or another as to the whole Part 52 certification process having been through this stage at this point?

MR. LINDBLAD: Well, it's a new process, new for the staff, new for the Committee, and it's not a complete process yet either because we're just certifying and we haven't seen a buyer and a combined license application yet. So, yes, there are the reservations among members of the Committee how the process is all going to work out. But we'll say we hope that there will be buyers and we hope that we will see the process completed to see how it works out. But we do believe that the reviews -- the staff gave the proposals and the reviews that the Committee gave to the proposals were very thorough.

CHAIRMAN SELIN: Thank you.

DR. KRESS: I think we've got a feeling that the

certification process with the ACRS and DACs will work and this looks like it can be a good process.

COMMISSIONER ROGERS: Did you have any opportunity or did it occur to you to think of how the lessons learned might be useful to us in reviewing a CANDU reactor design?

MR. LINDBLAD: I don't think we paid specific attention to that. But in the past year we did address the status of CANDU with the staff and we're still waiting to hear from the staff how we might review that at some time.

COMMISSIONER ROGERS: All right.

CHAIRMAN SELIN: Thank you, Mr. Lindblad.

MR. CARROLL: Just skimming through them quickly, I'd say virtually all of them are applicable to CANDU.

MR. LINDBLAD: On the specific ones in our letters, yes, but we didn't look for new ones that might be specific to CANDU because we don't know that much about that proposal yet.

DR. KRESS: We're doing quite well on time here.

MR. CARROLL: Average.

DR. KRESS: Average on time. That's quite well.

COMMISSIONER ROGERS: So far so good.

DR. KRESS: The next item is mine. It has to do with our protective action guidelines letter that we wrote on July the 13th this year. You might recall that that letter was prompted by a request from one of the

Commissioners. I think it was Commissioner Remick, but I'm not even sure of that. When System 80+ came in with the calculated design basis accident having dose values at the site boundary that were less than protective action guidelines for the new source terms, the question was asked if we thought there were any implications of that and what they were.

So, we took at look at it and we didn't think there were any particular significance to this with respect to the new source terms. It just so happens that System 80+ has a very good containment and you would expect as containments get better and better eventually one of them is going to have this calculated result. It's just to be expected as plants get better and better. So, it really didn't have much to do with the source terms.

But in the process of our review, it occurred to us that this may come up again with newer plants, advanced plants, that may be even better than System 80+ are likely to be and at some point you may come in with a plant that has a risk profile that is so good that the question will be asked, "Well, could we relax the emergency planning zones and the associated PAGs?" In order to address that question, we thought that what you needed was to go back to the emergency planning criteria of the PAGs and the emergency planning zones in particular and develop a risk

basis for them because the basis that they now have is only very loosely and ill stated in terms of risk.

With that risk basis, which may not be hard to come by, you could have an understanding and maybe guide your thinking on what might be a potential way to possibly relax these for newer plants that may really be very safe and have a risk profile that is acceptable without them. You may very well want to keep them for defense in depth purposes or other political reasons, but at least you would know what the risk basis was and hove a correlation of some sort to relate to the size of the emergency planning zones.

Now, this is not a straightforward thing because the independent variable is the size of the emergency planning zone, but that's tied in with population, winds, other meteorological conditions and how effective your emergency actions are as a function of that. So, it's not a straightforward conversion to risk and we thought this would be a good chance to take a look at how you might formulate a purely risk-based regulation and use it to guide your thinking.

As a matter of fact, the rationale letter that's later on in the agenda was really originally a paragraph in this letter because we thought that it addressed an overriding issue that has to do with all regulations, not just these particular ones. Some of the members thought it

was a subject that detracted from our PAG letter and ought to be a letter of its own and that's why it just sort of showed up out of the blue at one time. It addressed the same subjects, but was broader and we thought you ought to go back and look at the various regulations and see if there was a way to put them on a risk basis just as -- not because we want to -- think you can replace the body of regulations, but to give you a supplementary risk rationale to them to guide the thinking and to guide future uses of them. So, that's what that was about.

MR. CARROLL: Tom, in your discussion you used the phraseology "defense in depth and other political considerations," implying that defense in depth is the political consideration. Do you want to correct that?

DR. KRESS: No, I didn't -- I would like to correct that, if that's the impression I left. I think defense in depth is a very good concept. It's not political at all. I think the political considerations might be for perception purposes you want an emergency plan, not from risk basis at all. You may want one anyway. That's what I had meant, but not defense in depth.

CHAIRMAN SELIN: The question that your remarks raised really has more to do with your eighth item than to do with that specific item on the EPZs. That is -- I have to tell you I'm a little bit confused. Do you think we're

going too fast or too slow towards trying to do some probabilistic basis in our regulation or both? In the past you've chided us for going too slowly and your remarks today would go with that. But on the other hand, a couple of your letters give you the feeling that you thought we hadn't really thought out very clearly what we were going to do with the probabilistic results when we got them.

DR. KRESS: That's my --

CHAIRMAN SELIN: What would you like to see us do?

DR. KRESS: The ACRS hasn't discussed this fully in committee. So, when I'm speaking, I'm speaking for myself and some of my colleagues may differ. I think there's a need to go back and pretend like you didn't have the regulations that we now have and say if we were going to have a fully risk-based and perhaps performance-based regulation system, what would it consist of and how would it be formulated and how would one do it using PRAs and using acceptance criteria?

Starting from that, one could devise what would be needed to have this risk basis and then one would have to address the body of regulations that we do have and see how they conform to that which is not an easy task. You have to ask how each of the regulations affect risk and that means asking how they affect things like core damage frequency, containment failure probability, the source term and those

sort of things, and you have to translate that into things that are useable with the PRA. Then you do something, I think, that is quite similar to what you've done for implementing the safety goals where you use the PRA in a delta fashion to look at a delta core melt frequency and a delta containment failure criteria.

I think you'll do that with a -- you're doing that with new regulations. I think you can go back and do a similar thing with existing regulations, but go even further because you have to deal more with source terms and other issues that don't show up in that process.

But I think this overall look at the body of regulations is what's missing. I think the PRA implementation and the thing is being done piecemeal and looking at particular things. I mean it's being used very nicely and regulatory analyses is being used very nicely in the IPEs and other things, but it's not, I don't think, being looked at for the whole body of regulations and that's what we had in mind.

Was that helpful?

CHAIRMAN SELIN: Yes. I'll be blunt about it. I'm trying to figure out if I think you meant exactly what you said or what you might have said differently. What you basically told us is to rewrite all our regulations from scratch as if we were starting today and I don't think you

quite mean that.

DR. KRESS: No, no, I didn't mean that. I meant --

CHAIRMAN SELIN: I think what you mean is we've got to take a look at the overall regulatory body and say, "If we were starting today, what would it look like? How different is that from what we have today?"

DR. KRESS: That's more closely what I'm --

CHAIRMAN SELIN: Equivalent of Doctor Catton's top down analysis. Where should we be putting our effort because it's too different from -- the current regulations are too different and where should we just sort of let things stand?

DR. KRESS: Well, the regulations, I think, are quite adequate in assuring safety of the plants. I don't think you can start all over and throw them out. I wouldn't advocate that for a second. I think it would be good to go back on a systematic basis and try to see what is a good underlying risk rationale for them and not as a replacement for the regulations, but as guidance to your thinking on how to interpret them for new plants and when you make changes how to interpret them and to perhaps address this question of coherence in the regulations.

I think the underlying thread that ties all the regulations together ought to be risk and that's the way to

get coherence into it. That's more the tone of what I meant. I think you have to live with the body of regulations you have and you have to somehow get risk into the system and bring them along together and keep them both in place. There ought to be a way to do that.

DR. CATTON: I think you've missed a couple of opportunities. I think this Appendix J leak testing, at least from what we've seen, no matter what you do, it doesn't change risk very much. So, it ought to be relaxed. Another area is --

MR. CARROLL: And that's exactly what the staff is proposing to do.

DR. CATTON: Well, I'm not sure.

MR. CARROLL: Oh, yes.

DR. CATTON: Another area might have been in the Thermo-Lag issue could have been carried into a risk-based fire protection. Well, I'll comment on that in a few minutes.

CHAIRMAN SELIN: Thank you.

COMMISSIONER ROGERS: Before we leave this, on your point 4, I guess it was, on acceptable risk, this is what we started out with before we got into the larger issue. Can you give some indication to me of what relationship you see between our safety goals and determining an acceptable level of risk? How do you relate

those?

DR. KRESS: Yes. Let me --

COMMISSIONER ROGERS: What's different about them to begin with?

DR. KRESS: Let me use an example and that would be the protective accident guidelines, for example. My feeling is that we have an inverted view of where the risk level of adequate protection lies compared to the safety goals. There is a widespread view, in my opinion, that adequate protection is at this risk level and the safety goals are at this risk level. I think they're not. I think they're the other way around. The safety goals are a higher risk level than what we have achieved by the body of regulations that we have and what we call adequate protection. So --

CHAIRMAN SELIN: I think --

COMMISSIONER ROGERS: But we don't really have a measure of that yet, do we?

DR. KRESS: Yes. I think that's what NUREG-1150 in a sense is.

COMMISSIONER ROGERS: Well, for some plants.

DR. KRESS: Well, yes. If you accept NUREG-1150 with a significant difference between safety goals and make some adjustment for the body of plants or maybe look at the IPEs, we don't really have a measure to correct. I'm giving

you -- my feeling, is that the body of regulations have resulted in a risk level that is considerably below the safety goals.

Now, given that, if you're going to go back and do a risk-based set of regulations, one might think a starting point was you have to have an acceptable risk and keep below that. That's the essence of risk-based regulation. One might think safety goals is the starting point for that. I think that would be a mistake because you're already well below those and I think you should actually look at the body of regulations and use the risk level we've achieved as an acceptable level of risk.

COMMISSIONER ROGERS: Well, you know, I think that's a very interesting point of view. It's really quite a dramatic statement.

DR. KRESS: It is, yes.

COMMISSIONER ROGERS: We don't really know that - -

DR. KRESS: We don't know.

COMMISSIONER ROGERS: -- we have, in fact, achieved the safety goal.

DR. KRESS: We don't know.

COMMISSIONER ROGERS: We don't really know that. I think there have been suggestions from time to time from ACRS that we try to measure that.

DR. KRESS: Yes. That has been -- and this is one of the reasons for it, is --

COMMISSIONER ROGERS: And my own feeling is that we ought to get -- we ought to come to grips with that if we could.

DR. KRESS: Yes, and we thought you could use the IPEs for that with some enhancing --

COMMISSIONER ROGERS: If you do a level 3 PRA.

DR. KRESS: Yes. Yes.

COMMISSIONER ROGERS: And everybody isn't doing a level 3 PRA.

DR. KRESS: I know. We thought there may be some ways to do something with them though.

COMMISSIONER ROGERS: Yes.

DR. KRESS: Using bounding analyses for the site characteristics and things. But that's my feeling. For example, if you were to put a measure of the risk that's acceptable with the emergency planning zones, as an example we now have. It's the risk we now are accepting, which is lower than the safety goals in my opinion. You wouldn't want to start with the safety goals if you're going to develop a new set of regulations that are risk-based. Not only that, the safety goals do not, in my mind, allow you to deal properly with the uncertainties. I think the safety goals should have been written in terms of some uncertainty

levels. What that allows you to do, for example, is allow regulations that might be construed just to reduce the uncertainties, not to reduce the risk.

Nowhere in the regulations do we have a system that allows that. So, I would have formulated the safety goals in terms of certain level of confidence rather than the actual means.

DR. CATTON: It's not an easy problem.

DR. KRESS: It's not an easy problem.

DR. CATTON: They're struggling with this in Australia where they're trying to go from prescriptive fire regulation to performance based fire regulation. One of the things they're having a great deal of difficulty with is baselining what they've got because the new regulations can't make it less safe and it's a problem.

MR. LINDBLAD: Tom has suggested that PAGs is where we might visit risk-based regulation. I really think that may be one of the more difficult places because with PAGs is where we meet two other agencies who may not be on the bandwagon as much with risk-based regulation as those two agencies are.

DR. KRESS: I suggested that one because with your SRM to the staff you actually requested that they take a look at that and I think the ACRS has some ideas that we could give to the staff on our thinking on that, how to

actually do that and that's why I suggested that as --

COMMISSIONER ROGERS: Well, this might not be the best place to interject this thought, but I'm going to do it anyhow. That is we heard the other day a presentation from our staff on where they're using probabilistic risk analysis and it was very interesting. At the end of the discussion, I raised the question of whether it might be appropriate to draw a distinction that many countries have done between risk analysis and safety analysis, PSA versus PRA. As you know, in Europe and in Japan the analyses are done and called safety analyses rather than risk analyses and, in fact, in most cases don't involve a level 3. They don't really involve the actual consequences that you have to add onto the probabilities to give you risk.

I wonder if you -- my understanding is that you folks haven't been too comfortable with a change in terminology here and I wonder whether since you've just touched on this issue of other agencies, other considerations being involved when you start to look at the consequences, which are what you're talking about when you look at the protective action guidelines, that focusing on the probabilities not on the public health and safety consequences directly, but the probabilities of core melt or containment failure with some release of radiation, but not going that further step and calling that a safety analysis

and focusing upon the mechanics of that might be a useful way to approach as a first step this kind of a review.

DR. KRESS: There has been some strong feeling among some of the Committee members that it is a risk analysis, not a safety analysis. One is sort of the compliment of the other one. And we would, I think as a Committee, say we prefer PRA, but that's probably because we're insensitive to things like public perceptions and that sort of stuff. But we would have preferred the PRA.

With respect to focusing on core melt frequency and conditional containment failure probability, I think that's a good idea for a lot of things. With respect to the particular example of PAGs, I don't think it is because that happened to be one that encompasses everything and that's why I suggested it as a good start for risk, because it deals with the source terms and those other two things as well as meteorology and siting. It has everything we have in it and that's why it's a good place to start, because you can think of all of those things at the same time.

COMMISSIONER ROGERS: Well, I would hope that you would continue to think about this kind of an approach and these problems because it seems to me that this is something of a mark of the maturity of the technology and the science and the regulations all coming together to be able to do this. We know how we've gotten to where we are and I don't

think we have to make any apologies for it. That was the way life was. We had to make progress. But now is a time for reflection and some introspection and I think that trying to bring together everything we know and everything we've accomplished and putting it on a solid quantitative foundation is a very good thing to do if we can afford to do it.

DR. KRESS. Yes.

COMMISSIONER ROGERS: I think the "afford" is a big question in my mind. I don't know how we determine that, but, at any rate, I think it would be very good for us to try to think of how we could bring these things together because what you've said here today has not been said really, that in your opinion we really are well below the safety goals.

I think there's still a lot of arguments around of whether we're anywhere even close to the safety goals in some people's minds and trying to establish where we are with respect to safety goals. I've never heard anybody question the safety goals as an acceptable level. I've never heard anybody say, well, that's really not good enough. Maybe there are people who say that, but I haven't heard it. And if we're well below the safety goals, that's a very significant --

DR. KRESS: That is a significant finding.

COMMISSIONER ROGERS: -- piece of information that I think everyone ought to appreciate, but it's got to be soundly based to be able to make that statement. And I think how one gets to establishing the credibility of that statement is very important and I would hope that you could give us some guidance and thought on doing that.

DR. KRESS: We certainly will take that -- I have revitalized our strategic planning process and that is certainly high on our list of one of the things to look at and we will be sure it stays there, yes.

MR. LINDBLAD: All of this discussion has been on formulation of the regs. Of course, there is the opportunity to do resource allocation and identify research needs with PRA results and I suspect that that's valuable to you too.

COMMISSIONER ROGERS: Absolutely.

DR. KRESS: I guess we should move on now to the next item. It's yours, Ivan, on the Thermo-Lag issue.

DR. CATTON: I'm not sure how much you want to hear. As you know, the ACRS chose the staff option 1, business as usual, with my added comments recommending option 2.

MR. CARROLL: No, they didn't.

DR. CATTON: Well, it looked like that to me. I actually was the author of the letter before they got

through with it.

I was pleased to see the Commission approved the continuing use of option 1 with option 2 being the basis for exemptions. It's my view that when calculations are done that consider the actual fire loadings in some of these various rooms within a reactor building you're going to find that the present Thermo-Lag application will probably survive the three hours, so I was really pleased to see that.

I think, also, option 2 is a good place to start to develop risk-based fire protection. You first have to do the calculations and then you have to calculate uncertainties and you have to put it all together.

In the same vein, right after that letter was written I attended the Fire Science Safety Meeting in Canada and it turned out its theme was risk based fire protection. I was surprised to see that there were no NRC people there. The first paper was by -- and I have a trip report that you might find interesting. The first paper was by a fellow named Olaf Pederson from Sweden who is a civil engineer that helped develop their program, and t' ,'ve had risk based -- or, they call it performance based, performance based fire regulation since back in the early '70s. New Zealand also has it and they put their whole -- their entire fire regulations are on a page and a half.

MR. CARROLL: But these are not nuclear plant fire regulations.

DR. CATTON: No, they're not, but, see, one of the questions that was raised during our discussions with the staff was the need for the tools. This fellow from Sweden mentioned that there are four what they see to be acceptable calculational tools for predicting the impact of fire in a space.

Now, their interests are a little bit different. They don't want the building to fall down on somebody. They want it to stay up long enough for them to get out, and that's where the structural guy got involved in it. The beam has to hold the load even though it's half burned away.

There was also a very interesting paper, which I don't have a copy of yet, called "Magic Numbers and Golden Rules." One of the things they cited in this paper was the 20 foot separation that's supposed to represent a three hour barrier and how that was just patent nonsense, that in some places what they actually would do is -- a barrier is a barrier, so that means if it's three feet, four feet, five feet, doesn't matter, and in many cases it actually was above where the thermal layer would build up so the hot gases just pass it right by, but it meets all the regulations. That's the down side of prescriptive regulation and I don't know how many of those kinds of

things are built into Appendix R.

I think you'd be a lot better off to jump right in and this might be a place to practice. The French are actually doing that. They want to go to the fire based -- the risk based fire regulation, but to do it they're actually running experiments, developing the tools and practicing with this process before they actually implement it. I don't see any of us doing that. It might be a good idea to start.

CHAIRMAN SELIN: I guess I should start my answer with we're not complete idiots, you know, and we have two problems.

DR. CATTON: Just partial.

CHAIRMAN SELIN: One is to replace Appendix R with a performance based rule. The second is a remedial problem to do with Thermo-Lag. And, if they hadn't occurred at the same time, I don't think -- I mean, it's not to down play the value of the advice, but I just think that if we try to solve both problems at the same time not only do we have an unacceptable approach specifically but we would be widely seen, and correctly so, as using risk base to justify substandard performance. I haven't been able to figure out a way out of that, other than to first say you have to meet our current standards. When you meet the current standards, then we can talk about going to performance based --

DR. CATTON: But there is a step before you get to the risk base, and that's just do calculations. And that's essentially what the option 2 recommends.

COMMISSIONER ROGERS: Yes, that's right.

CHAIRMAN SELIN: I thought we'd instructed the staff to do that.

COMMISSIONER ROGERS: I think that's exactly what we --

DR. CATTON: And you learn to do the calculations. Your staff learns to accept what comes from calculations, then you'd make the next step. But you've got to start and I was pleased to see that you're going to.

COMMISSIONER ROGERS: No, I think that's exactly the philosophy, but, I think, as the Chairman said, the public perception would be very, very clear that everybody isn't happy about using risk analysis for anything and to put it on top of this situation with Thermo-Lag and come to the conclusion that, well, really, you know, we really don't have to worry because we've just done a new risk calculation. I think it would just be a totally unacceptable way to go for --

CHAIRMAN SELIN: I don't think you're idiots either.

MR. CARROLL: No, we aren't, and in fact we had the same discussion among ourselves.

DR. KRESS: Yes, in fact I think our letter almost --

COMMISSIONER ROGERS: But we decided, yes, go ahead and do the analyses, learn how to do these things.

DR. CATTON: Well, and you're going to allow them to use option 2 as the exemption route.

CHAIRMAN SELIN: That's correct, which is no different from what they could have done last year or the year before or the year before --

MR. CARROLL: Yes, it is.

DR. CATTON: Yes.

MR. CARROLL: The staff was very adamant that, unless you told them that they could expand their base of exemptions, that they were going to hold to what they had historically given.

DR. CATTON: So, actually, this is a major breakthrough in a way, that they will now be able to do analysis of what they have in hand in order to then try to get the exemption. I think that's a major step.

CHAIRMAN SELIN: Okay. I didn't understand it that way.

DR. CATTON: We're very pleased to see it.

CHAIRMAN SELIN: I've understood that the basis for an exemption is supposed to be the performance calculation, but specific to a particular --

DR. CATTON: But, you see, what they're demonstrating is that they have a three hour barrier. And I think that's what your requirements are, that they have a three hour barrier, and they can show by analysis that they've got it.

COMMISSIONER de PLANQUE: From this discussion it's clear why the staff was not at the conference. They were trying to figure out our SRM.

CHAIRMAN SELIN: You've been a great help throughout this whole process, Doctor Catton, and I've personally found it very helpful to discuss with you, as we go through the process, not so much how to write an SRM but what action should be taken at this point. Because, there were a number of -- you know, now it looks sort of simple in retrospect, but there were a number of ideas tried out that we hoped would be a magic solution and they just didn't work out at all. And the evaluation is not so much a process that we followed, that was pretty straightforward, but the evaluation of these other hopeful but not successful approaches was very important and you and the Committee were a bit help to me personally and I think to the Commission as a whole as we went through that process.

MR. CARROLL: One interesting aside, one of our summer interns was given the assignment to talk to the people that run these tests and tell us how much fuel it

takes to run a three hour fire test. Amy came up with a very nice report and I'm sure we can share it with you, but it's a lot of fuel compared to what exists in a real world nuclear plant probably any place but the diesel rooms.

COMMISSIONER de PLANQUE: You mentioned the French program, that they're moving towards the performance based. Is this the nuclear industry?

DR. CATTON: Yes.

COMMISSIONER de PLANQUE: Not just the general fire --

DR. CATTON: Not just general. It's for the nuclear. In the trip report, I have the person's name. He indicated an interest in communicating with us on what they were doing. I can get it to you.

CHAIRMAN SELIN: Thank you very much, Doctor Catton.

DR. KRESS: The next item is the National Academy of Science workshop.

Bill?

CHAIRMAN SELIN: Welcome, Doctor Shack. It's nice to have you.

DR. SHACK: Thank you.

The workshop is sort of a jam tomorrow kind of arrangement. As you know, the proposal hasn't quite been finalized yet, although I got a note from our staff today

that it's imminent. It's always sort of been imminent for months, it appears.

We did have a presentation from the staff of the National Academy of Sciences in July, and, again, one of the virtues of a National Academy study is that it's very independent and we'll really know what's going to happen after the panel is selected and they decide what it is exactly they're going to do, but from the description that we had it seemed to be addressing the kind of issues that we thought should be addressed.

It does still seem to us an excellent route to tap all the expertise that's in other fields on digital systems in critical applications, and, again, from the broad outline of the description that was given by the National Academy of Science person, the proposed make-up of the panel, it does seem as thought it will meet that goal. We hope to interact with that panel after it's selected and, again, that's when the real meat of the study will begin is once the panel is selected. We have expressed an interest in meeting with them and they've essentially expressed a willingness to meet with us to discuss some of our concerns and interests.

Specifically, there was some question as to how deeply this should go into human factors work. Again, it's difficult from the makeup of the panel. It seems to us largely weighted towards hardware and software problems,

which is where we think the study should be. But again, one has to actually see when the panel is appointed and what they really decide to do before one can make a final decision.

DR. KRESS: You can have the next one also.

DR. SHACK: I get the next one too.

The next topic is the voltage repair, the voltage based repair criteria for steam generators. We just finalized our letter this morning on that subject in which we recommended that the proposed generic letter be sent out for public comment, which is of course good because it was sent out for public comment, and we don't have a fundamental disagreement with that. There was a differing professional opinion that examined some of the issues there.

We believe that the voltage based criterion applied to the situation in which it is being applied, that is the outer diameter stress corrosion cracking confined to the tube support plates, is not likely to lead to any significant increased risk in tube ruptures. There is, again, considerably more uncertainty in the leakage associated with allowing the steam generators to operate this way.

It is clear that one has fundamentally changed something here. That is, there is now a reasonable chance that you're going to be operating with the primary coolant

boundary breached and you will have leaks, which again is not something that's been done in the past is tried to maintain that to be leak tight and not operate with cracks. The correlations that are used to determine the leak rates are empirically based, and, again, a limited amount of data, although probably enough to go forward with it.

We recommend in our letter that some more attention be paid to the calculation of the radiation doses associated with operating with the steam generators in this condition. The staff has presented an analysis. Some of the members of the Committee have taken different approaches to looking at the releases associated with this during a main steam line break and all the approaches seem to indicate one does meet the Part 100 limits, but the margins are a little bit uncertain and it certainly warrants further consideration.

COMMISSIONER ROGERS: Well, have you resolved this question of the staff presentation and the Committee's view of things? My impression was that there was some question about whether the staff's information was correct or not that was presented to the Committee. Has that issue been --

DR. SHACK: That issue has been -- there was an error in the presentation to the subcommittee meeting last month which was identified by the staff and they promptly

notified us that there was an error in their presentation. We had a presentation this morning essentially where that analysis was redone. Again, it really didn't lead to different conclusions, although it did lead to the notion that the margins that they had thought were there were substantially reduced.

DR. KRESS: By the way, we did express our appreciation to the staff. We thought that was highly professional behavior to come forth and they're to be congratulated. We like to encourage that, and so I thought I'd get that on the record here.

COMMISSIONER ROGERS: Good.

CHAIRMAN SELIN: Thank you very much, Doctor Shack.

DR. KRESS: The next item we've already discussed. It's the rationale letter. Unless you have additional questions on that, we can go on to the selection of new ACRS members.

As you know, we have one vacancy now and we'll have another one very soon, so we're trying to fill two positions at the same time. The Committee has tried to put together a set of criteria that are quantifiable, quantifiable by looking at résumés and applications and other things, so that the panel that you select whenever that gets put together has some way to deal with the number

of applications we're getting in a quantifiable systematic way, plus they can also put judgement into that also. We've been wrestling with what those criteria ought to be and how to quantify them. We've come up with some thoughts and are still working on the quantification of these.

In the meantime, the ACRS members themselves, believing that they probably are in position to know who some very top notch candidates might be if you start from the top down and say who are the actual best candidates based on personal knowledge and status in the community and that sort of thing, we've come up with a number of names of our own. I think we had six on our list and we're in the process of contacting some of those, and I think two have already opted out of being considered. It leaves us with four on the list that are amenable and would like to be considered. We're in the process now of prioritizing those and perhaps getting another name, so we might end up sending the panel itself five choices from the ACRS and we may send those independently to you. I don't know if you'll end up with --

CHAIRMAN SELIN: That's not the process. I mean, the process is people have to apply.

DR. KRESS: Yes. I'm not sure what the process -

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CHAIRMAN SELIN: I mean, the right avenue for

people you think would be good candidates is to encourage them to apply.

MR. CARROLL: They have applied.

DR. KRESS: They have. That's the first thing we've done, yes.

CHAIRMAN SELIN: But once they're in the flow, then there's a well-defined process for considering the candidates.

DR. KRESS: Yes. The question I would have, then, is you would not expect to see a letter from us with a recommendation?

CHAIRMAN SELIN: I would expect that whatever views those members of the ACRS --

DR. KRESS: Would be transferred to the panel?

CHAIRMAN SELIN: -- would be transferred to the panel. We really have to stick to the panel procedures.

There's nothing wrong with individual recommendations to the panel, recommendations as any public citizens could make, but, if I got a letter on one of these candidates, I would just turn it over to the panel and say, "Please take that into account." I wouldn't independently act on a letter, so --

DR. KRESS: Good. That's helpful. It clarifies our -- what we should be doing.

COMMISSIONER de PLANQUE: Since this is a new

process, I think any feedback that you have on how it progresses would be useful to us. It's too early in the --

DR. KRESS: It's maybe a little early now, but I think we are already developing some feedback thoughts and we would be pleased to give them.

MR. CARROLL: Very cumbersome.

COMMISSIONER ROGERS: I think it's feed forward process, feed forward.

CHAIRMAN SELIN: Feet?

COMMISSIONER ROGERS: Feed forward, rather than feedback.

CHAIRMAN SELIN: Oh, I see.

MR. LINDBLAD: Or best foot forward.

CHAIRMAN SELIN: Okay. Sorry.

DR. KRESS: We have no additional items, unless you have something you'd like to --

CHAIRMAN SELIN: I don't have an item in the sense of a specific question. I would just like to repeat the general admonition that the most useful thing that the Committee can do, at least for me as an individual Commissioner, is to sit back and look for places where you're not just saying did the staff do this piece right or that. It's sort of the analogy of Doctor Catton's, the top-down, you know, a major process, an important issue where it's not that we're doing some of the pieces wrong but we're

leaving a piece out entirely.

The canonical question I always put to you is, is there someplace where even if we answer all the questions we've asked we haven't answered all the questions that are necessary to decide what to do. And the huge error of omission is much more worrisome to me than a mistake, an error of commission along the way, because, if somebody has asked the right questions, sooner or later we'll figure out if they got the right answer or not. But the one thing that doesn't present itself is just a complete omission where we've just missed some whole topic that we should be asking, either a subject that we're not looking at or we're looking at a subject where we're leaving out a major piece.

The one that occurs to me, for instance, and this isn't really a request that you look at it, as we get down to 10^{-Xs} where Xs are getting to be large numbers, the probability that somebody just left the containment open or, you know, put in something backwards seems to start to overwhelm all the probabilities that we can calculate. And I really get worried when we get into a question about is the calculation less than the safety goal and therefore we can quit or not. I mean, that's the whole philosophy behind severe accidents, behind blunders, behind defense in depth.

But, if we're going to be serious about performance work, we need to have some kind of a bounding

analysis based on blunders as opposed to a fine calculation based on errors. Using the old difference, an error is something that's statistically inevitable. A blunder is what really happens in real life. And I have no idea about how to go about doing that and that's an issue where if you had some advice as to, you know, sort of the level zero human factor issue -- there probably are others like that as well, so please don't -- just because we haven't been smart enough to ask you that, please don't be shy about looking for issues of that type as opposed to we have this research program or this program and are we doing it quite right or not.

DR. KRESS: As a matter of fact, that is the reason I restarted our strategic planning. It's that sort of thing we're thinking about in there and we're sort of glad to have that in there. It does look like an interesting item.

CHAIRMAN SELIN: Well, that particular question is the one that I worry about more than any other question along the way. As we go towards performance-based, how do we worry about truly incompetent performance, not just stuff that's a little bit off? How do we feed that into what we're doing?

Commissioner?

COMMISSIONER de PLANQUE: Well, just along the

lines of those issues, I was very interested to hear what you said about risk-based regulation and performance-based. And if you are not aware of it, you maybe would like to be aware of some of the other activities that are going on interagency-wide.

I just attended a meeting this morning on a subgroup on risk as part of the regulatory group and this is the direction in which they're going. There is an interagency effort to formulate a policy, and you may have seen it in -- it was leaked to Inside EPA and it's in that document if you want to look at it. It's just a working draft that's being discussed among the agency representatives, but it's clearly moving in that direction.

And if you also look at some of the legislation that's being introduced in Congress right now, there's a lot of interest in risk-based regulation and comparative risk and trying to get some coherence in the big picture, not alone just within one small field. So, I think it's a subject whose time is well overdue and I'm glad to hear that you're doing a lot of discussing on that issue.

DR. KRESS: Thank you. We did receive your package of information on the interagency group and I've passed it out to the Committee.

COMMISSIONER de PLANQUE: Okay.

DR. KRESS: We haven't had a chance to look at it

as a committee yet, but we do want to thank you for that.

COMMISSIONER de PLANQUE: Okay.

CHAIRMAN SELIN: My view is that if somebody really took risk-based regulation seriously and looked at the risk of a nuclear accident compared to a lot of other risks we would be reduced to about an office within EPA.

DR. KRESS: We don't want to go too far with this, right.

DR. CATTON: I think David Okrit came to that conclusion years ago.

CHAIRMAN SELIN: Yes, I mean, the straight calculation. The straight calculation. But on a serious note, I really do think there's too much of a chance of a blunder and doing these calculations and comparing them with the risk of driving a car or -- well, smoking is a part, but, just, you know, things that aren't completely under your control would lead to conclusions that are counter-intuitive, and so I have to worry a little bit about the calculations. I do think it's appropriate that there be a high level organization that really is concerned with nuclear power plant safety and a number of other serious risks.

Commissioner Rogers?

COMMISSIONER ROGERS: No. I think it's been an excellent presentation. Appreciate it very much.

CHAIRMAN SELIN: I am amazed that you got through this program in that schedule. I didn't think there would be --

DR. KRESS: I'm a tough task master.

DR. CATTON: In spite of my going over my allocated time.

MR. CARROLL: We spent 15 minutes before we came over here beating Ivan --

CHAIRMAN SELIN: He did very well. Thank you very much.

DR. KRESS: Thank you.

[Whereupon, at 2:43 p.m., the above-entitled matter was adjourned.]

CERTIFICATE

This is to certify that the attached description of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: PERIODIC MEETING WITH THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS - PUBLIC MEETING

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Thursday, September 8, 1994

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company

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