



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

June 14, 2000

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT - 472ND MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS, ON MAY 11-13,
2000, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

Dear Chairman Meserve:

During its 472nd meeting, May 11-13, 2000, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports. In addition, the Committee authorized Dr. Larkins, Executive Director, ACRS, to transmit the memoranda noted below:

REPORTS

- SECY-00-0053, "NRC Program on Human Performance in Nuclear Power Plant Safety" (Report to Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated May 23, 2000)
- Use of Defense in Depth in Risk-Informing NMSS Activities (Report to Richard A. Meserve, Chairman, NRC, from B. John Garrick, Chairman, ACNW, and Dana A. Powers, Chairman, ACRS, dated May 25, 2000)

MEMORANDA

- Proposed Final Revision 1 to Regulatory Guide 1.54, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants" (formerly DG-1076) (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 19, 2000)
- Proposed Modifications to Regulatory Guidance Documents Regarding Use of Risk-Informed Decisionmaking in License Amendment Reviews (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 22, 2000)

- Draft Regulatory Guide DG-1096, "Transient and Accident Analysis Methods" and Standard Review Plan, Section 15.0.1, "Review of Analytical Computer Codes" (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 22, 2000)

OTHER

- NUREG-1635, Vol. 3, "Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program" (Report to Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated May 24, 2000, transmitting NUREG-1635, Vol. 3)

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Initiatives Related to Risk-Informed Technical Specifications

The Committee heard presentations by and held discussions with representatives of the NRC staff and the Nuclear Energy Institute (NEI) regarding the NRC staff's efforts in the area of risk-informed technical specifications and associated industry initiatives proposed by the Risk-Informed Technical Specification Task Force (RITSTF). In particular, the Committee discussed Initiative 2 on missed technical specification surveillance requirements and Initiative 3 on mode restraint flexibility. The Committee discussed issues related to operable versus functional plant equipment, qualitative versus quantitative risk assessment, the role of configuration risk management programs, the relationship between technical specifications and 10 CFR 50.65(a)(4) of the maintenance rule, and the role of the revised reactor oversight process in verifying safety. The Committee also discussed the potential impact of missed surveillances on equipment failure rates and the need to review risk transition models proposed by the Nuclear Steam Supply System (NSSS) Owners Group.

Conclusion

The Committee plans to continue its review of initiatives related to risk-informed technical specifications as well as the risk-transition models proposed by the NSSS Owners Groups during future meetings.

2. Potential Revisions to the Pressurized Thermal Shock (PTS) Acceptance Criterion

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding a draft Commission paper concerning

reevaluation of the PTS Rule (10 CFR 50.61) screening criterion. The staff summarized recent advances in materials research that have led to the reevaluation of the technical basis for the PTS Rule. The staff presented several regulatory approaches that could be used to reevaluate the quantitative criterion used in PTS screening.

The Committee members and the staff discussed the relationship among the current PTS screening criterion, the core damage frequency, and the large early release frequency. The use of qualitative adequate protection criteria versus quantitative safety goal criteria, and the application of defense in depth and confidence levels were also discussed.

Conclusion

This briefing was for information only. The Committee plans to continue its review of this matter at future meetings.

3. Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"

The Committee heard presentations by and held discussions with representatives of the NRC staff, NEI, and Union Electric Company concerning the staff's efforts in response to the staff requirements memorandum dated January 5, 2000 (SECY-99-246), concerning license amendments in which the amendment request complies with the regulations and other license requirements. The Committee discussed the results of the staff's efforts to work with internal and external stakeholders to clarify what constitutes a "special circumstance" that would cause the NRC to request or use risk information in its evaluation of licensee submittals. The Committee considered the staff's proposed new Appendix to NUREG-0800, Standard Review Plan, Chapter 19, "Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking: General Guidance," and associated modifications to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The Committee also considered NRC Regulatory Issue Summary 2000-07 which was issued by the NRC to inform licensees of the interim guidance on the use of risk information by the staff in its review of license amendment requests, including reviews of license amendment requests that are not risk informed.

Conclusion

The Committee authorized the ACRS Executive Director to issue a memorandum to the Executive Director for Operations dated May 22, 2000, on this matter.

4. Proposed Regulatory Guide and Standard Review Plan (SRP) Section Associated With NRC Code Reviews

The Committee heard presentations by and held discussions with representatives of the NRC staff concerning draft Regulatory Guide DG-1096, "Generic Transient and Accident Analysis Methods," and Standard Review Plan, Section 15.0.1, "Review of Analytical Computer Codes." Specifically, the staff discussed with the Committee the revisions to the regulatory guide and the SRP section based on comments made during the Subcommittee meeting. The staff stated that issues discussed during the Subcommittee meeting were being incorporated into the regulatory guide and the SRP section. The Committee and the staff also discussed the generic applicability of the code review and the use of or reference to the code, scaling, applicability, and uncertainty (CSAU) study. The staff indicated that the regulatory guide would apply to other code reviews as well as to thermal hydraulics. They also indicated that the CSAU study was performed to evaluate code uncertainties in order to obtain best estimate calculations. The staff will provide any revisions to the regulatory guide and the SRP Section to the Committee before they are issued for public comment.

Conclusion

The Committee authorized the ACRS Executive Director to issue a memorandum to the NRC Executive Director for Operations dated May 22, 2000, on this matter indicating that the Committee has no objection to publishing the draft regulatory guide and the SRP section for public comment.

5. SECY-00-0062, Risk-Informed Regulation Implementation Plan

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the NRC Risk-Informed Regulation Implementation Plan (RIRIP).

The Committee discussed the staff's draft proposal for risk-informing of the regulatory processes and practices and the description of issues that have or may affect the implementation of the Commission's risk-informed activities. The staff is revising the probabilistic risk assessment implementation plan to make it

a risk-informed implementation plan.

In SECY-00-0062, the staff noted that the RIRIP would be organized to track three principal arenas in the agency's strategic plan (nuclear reactor safety, nuclear materials safety, and nuclear waste safety). The Committee discussed the criteria for the selection and prioritization of practices and policies to be risk informed and the guidelines for implementation.

Conclusion

The Committee plans to continue its review of this matter and to follow up on the staff's progress during future meetings.

6. Operating Event at E. I. Hatch Nuclear Power Plant, Unit 1

The Committee heard presentations by and held discussions with the representatives of the NRC staff regarding the findings and recommendations of the Augmented Inspection Team (AIT), which investigated the January 26, 2000 reactor trip event, at E.I. Hatch Nuclear Power Plant, Unit 1.

The NRC staff briefly presented the overall event sequence and the findings of the AIT. This event occurred during the shift change at E.I. Hatch Unit 1. The plant was at the 100 percent rated thermal power when the reactor vessel water level began decreasing as the result of an unexpected closure of the inlet valve to the high-pressure feedwater heater. Later, it was determined that the valve closed because of a problem with the valve control switch. The valve closure caused a large reduction in feedwater flow, the reactor water level decreased, and an automatic reactor trip occurred as expected.

The NRC staff stated that this event is being considered a significant event and has potential generic implications. The NRC staff plans to continue its review of the following two issues, including interaction with the Boiling Water Reactor Owners Group and General Electric as appropriate:

- To what extent should water be allowed to enter the main steamlines at BWRs? Should generic guidance be developed for BWRs with specific criteria directing when MSIVs should be closed?
- What is the significance and the specific impact of the water in the main steamlines relative to considerations in the design and licensing basis?

The licensee's representatives stated that they had initiated broader corrective

actions to address operational performance issues. The licensee promptly completed several corrective actions, including revision of the operating shift turnover process.

Conclusion

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

7. Physical Security Requirements at Power Reactors

The Committee heard presentations by and held discussions with representatives of the NRC staff, the Nuclear Control Institute (NCI), and NEI regarding a draft Commission paper concerning the status of revising the physical security requirements at power reactors. During a closed portion of this session the staff described the design basis threat and the present threat assessment.

The Committee members, the staff, NCI, and NEI discussed security event response procedures, differences between the Operational Safeguards Response Evaluation and Safeguards Performance Assessment programs, licensees' ability to develop security event scenarios, detection of sabotage performance by an insider, developing defensive strategies against an intelligent adversary, and the difficulties in using performance-based inspections to evaluate deterministic rules.

Conclusion

This briefing was for information only.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee discussed the response from the EDO, dated April 21, 2000, to ACRS comments and recommendations included in the ACRS report dated March 13, 2000, concerning SECY-00-0007, "Proposed Staff Plan for Low-Power and Shutdown Risk Analysis Research to Support Risk-Informed Regulatory Decisionmaking."

The Committee decided that it was satisfied with the EDO's response. The Committee plans to continue to evaluate matters related to low-power and shutdown operations as operating plant experience indicates emergent risk significant issues of concern.

- The Committee discussed the response from the EDO, dated April 19, 2000, to ACRS comments and recommendations included in the ACRS report dated March 15, 2000, concerning the revised reactor oversight process (RROP).

The Committee decided that it was satisfied with the EDO's response. In accordance with the Staff Requirements Memorandum dated April 5, 2000, the Committee plans to continue its review of the results of the use of performance indicators and the significance determination process subsequent to initial implementation of the RROP.

- The Committee discussed the response from the EDO dated April 18, 2000, to ACRS comments and recommendations included in its letter dated March 13, 2000, concerning proposed resolution of GI B-17, "Criteria for Safety-Related Operator Actions" and Generic Issue 27, "Manual vs Automated Actions."

The Committee decided it was satisfied with the EDO's response, but expressed concern regarding use of information from ANSI/ANS Standard ANSI/ANS 58.8-1994, "Time Response Design Criteria for Safety-Related Operator Actions."

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from April 5 through May 10, 2000, the following Subcommittee meetings were held:

- Thermal-Hydraulic Phenomena - April 27, 2000

The Subcommittee continued its discussion of the NRC Code Guideline Documents (Proposed Regulatory Guide and Standard Review Plan Section).

- Joint Meeting of the ACRS Subcommittees on Plant Operations and on Reliability and Probabilistic Risk Assessment - April 28, 2000

The Subcommittees discussed NRC staff and industry initiatives related to risk-informed technical specifications.

- Joint Subcommittee Meeting - May 4, 2000

The ACRS and ACNW Joint Subcommittee met to discuss the development of risk-informed regulation in the Office of Nuclear Material Safety and Safeguards, including risk-informing fuel cycle programs, integrated safety assessments, byproduct material risk analysis, dry cask storage risk analysis, the results of a public workshop on the use of risk information in regulating the use of nuclear

materials, and related matters.

- Planning and Procedures - May 10, 2000

The Planning and Procedures Subcommittee discussed proposed ACRS activities, practices, and procedures for conducting Committee business and organizational and personnel matters relating to ACRS and its staff.

LIST OF FOLLOW-UP MATTERS FOR THE EXECUTIVE DIRECTOR FOR OPERATIONS

- The Committee plans to continue to evaluate matters related to low-power and shutdown operations as operating plant experience indicates emergent risk significant issues of concern.
- In accordance with the Staff Requirements Memorandum dated April 5, 2000, the Committee plans to continue its review of the results of the use of performance indicators and the significance determination process subsequent to initial implementation of the RROP.
- The Committee requested that the staff provide the ACRS with a revised version of Regulatory Guide DG-1096 and SRP Section 15.0.1 associated with NRC code reviews prior to issuing them for public comment.
- The Committee plans to continue its review of the risk-informed regulation implementation plan at future meetings.
- The Committee plans to continue its review of initiatives related to risk-informed technical specifications as well as the risk-transition models proposed by the NSSS Owners Group during future meetings.
- The Committee plans to review and comment on the status of the PTS Technical Basis Reevaluation Project at the October 5-7, 2000 ACRS meeting.

PROPOSED SCHEDULE FOR THE 473rd ACRS MEETING

The Committee will consider the following topics during the 473rd ACRS Meeting, June 7-9, 2000:

Proposed Resolution of Generic Safety Issue-173A, "Spent Fuel Storage Pool for Operating Facilities"

Briefing by and discussions with representatives of the NRC staff regarding the

proposed resolution of Generic Safety Issue-173A.

Regulatory Effectiveness of the Station Blackout Rule

Briefing by and discussions with representatives of the NRC staff regarding the results of the review performed by the staff to determine the regulatory effectiveness of the Station Blackout Rule.

Proposed Final Standard Review Plan Section and Regulatory Guide Associated with the Revised Source Term Rule

Briefing by and discussions with representatives of the NRC staff regarding the proposed final Standard Review Plan Section and Regulatory Guide associated with the application of the revised source term for operating nuclear power plants.

Assessment of the Quality of Probabilistic Risk Assessments (PRAs)

Briefing by and discussions with representatives of the NRC staff regarding the staff's proposal to address PRA quality until the industrial standards have been completed, including the potential role of the industry PRA certification process.

Performance-Based Regulatory Initiatives

Briefing by and discussions with representatives of the NRC staff regarding a draft Commission Paper associated with performance-based regulatory initiatives and related matters.

Use of Industry Initiatives in the Regulatory Process

Briefing by and discussions with representatives of the NRC staff regarding use of industry initiatives in the regulatory process.

Safety Culture at Operating Nuclear Power Plants

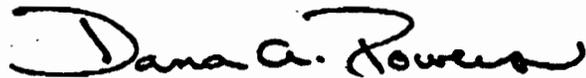
Briefing by and discussions with Mr. Sorensen, ACRS Senior Fellow, regarding the safety culture at operating nuclear power plants.

Visit to Davis Besse Nuclear Power Plant and Meeting with NRC Region III Personnel

Briefing by and discussion with Mr. Singh, ACRS Senior Staff Engineer, regarding the proposed schedule for touring the Davis Besse Nuclear Power Plant, specific plant areas to be visited, proposed topics for discussion with representatives of the licensee, and the NRC Region III Office.

Proposed Plan and Assignments for Reviewing License Renewal Guidance Documents
Discussion of the proposed plan and member assignments for reviewing the license renewal guidance documents (Standard Review Plan, Regulatory Guide, and Generic Aging Lessons Learned II Report).

Sincerely,

A handwritten signature in black ink that reads "Dana A. Powers". The signature is written in a cursive style with a large initial "D" and a long, sweeping underline.

Dana A. Powers
Chairman

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REPORTS AND MEMORANDA

REPORTS

- SECY-00-0053, "NRC Program on Human Performance in Nuclear Power Plant Safety" (Report to Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated May 23, 2000)
- Use of Defense in Depth in Risk-Informing NMSS Activities (Report to Richard A. Meserve, Chairman, NRC, from B. John Garrick,

Chairman, ACNW, and Dana A. Powers, Chairman, ACRS, dated May 25, 2000)

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- Proposed Final Revision 1 to Regulatory Guide 1.54, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants" (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 19, 2000)
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OTHER

- Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program (Report to Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated May 24, 2000)

APPENDICES

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

CERTIFIED

MINUTES OF THE 472ND MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MAY 11-13, 2000
ROCKVILLE, MARYLAND

The 472nd meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on May 11-13, 2000. Notice of this meeting was published in the *Federal Register* on April 21, 2000 (65 FR 21492) (Appendix I). The purpose of this meeting was to discuss and take appropriate action on the items listed in the meeting schedule and outline (Appendix II). The portion of the meeting concerning the status of revising the physical security requirements for power reactors was closed. The meeting was open to public attendance, but there were no written statements or 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., 1025 Connecticut Avenue, N.W., Suite 1014, Washington, D.C. 20036, and on the ACRS/ACNW Web page at (www.NRC.gov/ACRS/ACNW).]

ATTENDEES

ACRS Members: Dr. Dana A. Powers (Chairman), Dr. George Apostolakis (Vice Chairman), Mr. John Barton, Dr. Mario V. Bonaca, Dr. Thomas S. Kress, Dr. William J. Shack, Dr. Robert L. Seale, Mr. John D. Sieber, Dr. Robert E. Uhrig, and Dr. Graham B. Wallis. 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. Dana A. Powers, Committee Chairman, convened the meeting at 8:30 a.m. and reviewed the schedule for the meeting. He summarized the agenda topics for this meeting and discussed the administrative items for consideration by the full Committee.

II. Initiatives Related to Risk-Informed Technical Specifications (Open)

[Note: Mr. Michael T. Markley was the Designated Federal Official for this portion of the meeting.]

Introduction

Mr. Jack Sieber, Vice Chairman of the ACRS Subcommittee on Plant Operations, introduced the topic to the Committee. He stated that a joint meeting of the Subcommittees on Plant Operations and on Reliability and Probabilistic Risk Assessment met on April 28, 2000, to discuss NRC staff efforts in the area of risk-informed technical specifications and associated industry initiatives proposed by the Risk-Informed Technical Specification Task Force (RITSTF). He stated that the purpose of this meeting was to review RITSTF Initiative 2 on missed technical specification surveillance requirements and Initiative 3 on mode restraint flexibility. Mr. Sieber summarized the Subcommittees' discussions and noted that the staff was not requesting a report or letter from the Committee at this time.

Industry Presentation

Mr. Biff Bradley of the Nuclear Energy Institute (NEI) provided an overview presentation to the Committee. He stated that representatives of the Combustion Engineering Owners Group (CEOG), the Boiling Water Reactor Owners Group (BWROG), Southern California Edison Company, and EXCEL Consulting who participated in the meeting on April 28, 2000, of the joint Subcommittees were unable to attend, and he offered to respond to questions and concerns on their behalf. Significant points raised during the presentation include the following:

- NEI proposes to maximize the use of the maintenance rule in accordance with 10 CFR 50.65(a)(4). The goal is to make technical specifications and 10 CFR 50.65(a)(4) complementary.
- For Initiative 2, the industry proposes to allow extension of missed technical specification surveillances to the next available opportunity (i.e., the next available operating state or mode that would allow completion of the surveillance) or the duration of the next full surveillance interval (e.g., up to 18-24 months for outage-related tests). NEI stated that most missed surveillances were caused by administrative errors (e.g.,

procedure changes) and emphasized that the industry proposal would not allow surveillances to be missed willfully.

- NEI stated that the licensee's corrective action program is a key element of the industry approach to risk-informed technical specifications. NEI noted that monitoring will be important and suggested that follow up verification should be part of the revised reactor oversight process (RROP).
- For Initiative 3, the industry proposes to make Technical Specification 3.0.4 a risk-informed process whereby licensees are allowed to change plant modes with equipment out of service. If licensees are unable to return the equipment to service within the technical specification allowed outage time, they would be required to comply with the normal technical specification required actions (e.g., commence a plant shutdown). The owners groups propose to use configuration risk management programs (CRMPs) and risk transition models to evaluate the potential risk for actions associated with this initiative.
- NEI is establishing an executive-level technical specification working group to provide policy guidance and coordination of risk-informed technical specification initiatives with CFR 50.65(a)(4) of the maintenance rule.

NRC Staff Presentation

Mr. Robert Dennig, NRR, led the discussions for the NRC staff. Ms. Nanette Gilles and Mr. Mark Reinhart, NRR, provided supporting discussion. Messrs. Scott Newberry and Richard Barrett, NRR, also participated. Significant points made during the presentation include the following:

- The staff summarized its view of concerns expressed by the joint Subcommittees on April 28, 2000, including (1) the need for details concerning the decision process for licensees' actions and NRC's verification of safety, (2) the need for quality in licensee probabilistic risk assessments (PRAs) and risk analysis tools, (3) the need for better understanding of how RROP will ensure that adequate safety is maintained, (4) the need for public involvement and support for initiatives, (5) the potential adverse effects on plant safety culture, and (6) the effectiveness of communication of proposed changes.

- Missed surveillances will continue to be reportable. The major change is that the risk-informed initiative will allow licensees to delay completion of technical specification required actions. In the current regulatory framework, licensees could request enforcement discretion for these requirements and continue to operate with NRC approval or simply comply with the required technical specification actions (i.e., shut down the plant within a specified time.
- In general, the staff supports Initiatives 2 and 3 proposed by the industry. However, formal action is deferred pending receipt of industry responses to staff requests for additional information. The staff is also considering issues noted by the ACRS and its Subcommittees regarding these matters.

Dr. Powers questioned how licensees would evaluate risk for missed surveillances. Dr. Kress questioned how licensees would address "risk spikes" and suggested that criteria be established to handle them. NEI reiterated its earlier statement that risk would be evaluated and managed in accordance with 10 CFR 50.65(a)(4) of the maintenance rule and the CRMP.

Mr. Sieber questioned the appropriateness of allowing a full surveillance interval when surveillances are missed. He expressed the view that equipment relied on to prevent or mitigate plant events and incidents could degrade without detection. Drs. Apostolakis and Kress stated that some plant conditions (i.e., operational modes and plant transitions) are not modeled well. Therefore, it may not be possible to calculate a change in the failure rate.

Dr. Apostolakis noted that the Subcommittees had requested and the CEOG had agreed to provide its risk transition model for review by individual ACRS members. Dr. Apostolakis noted that the CEOG had not yet provided the subject model and questioned when it might be available for ACRS review. NEI agreed to follow up on this matter. Drs. Apostolakis and Seale suggested and the Committee agreed that a Subcommittee meeting would be appropriate to review the broader issue of risk transition models.

The Committee extensively discussed issues related to operable versus functional plant equipment, qualitative versus quantitative risk assessment, the role of CRMPs, the relationship between technical specifications and 10 CFR 50.65(a)(4) of the maintenance rule, and the role of the RROP in verifying safety.

Conclusion

The Committee decided to continue its review of initiatives related to risk-informed technical specifications during future meetings. The Committee also decided to schedule a Subcommittee meeting in the near future to review risk transition models proposed by the Nuclear Steam Supply System (NSSS) Owners Groups.

III. Potential Revisions to the Pressurized Thermal Shock Acceptance Criterion

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

Dr. Dana Powers, ACRS Chairman, introduced this session by calling on the staff to begin its presentation. Mr. Mark Cunningham, RES, presented a draft Commission paper that provided different approaches for reevaluating the pressurized thermal shock (PTS) screening criterion. He stated that the purpose of the paper is to obtain an early Commission review on the staff's intended direction with respect to revising one part of the screening criterion used in the PTS rule. Mr. Cunningham explained that the PTS rule issued in 1983 is an adequate protection rule with a PRA criterion of less than 5×10^{-6} through-wall cracks per reactor year. He described how the staff determined the value for the criterion. He noted that the rule assumes that a through-wall crack is equivalent to a large opening in a reactor vessel, which results in core damage.

Mr. Edwin Hackett explained that recent material research provides a better understanding of material properties, such as flaw distributions, irradiation embrittlement correlations, fracture toughness, and beltline fluence calculations. He described how improvements in the fracture mechanics computer code and in the understanding of material properties could result in a more accurate PTS screening criterion.

Mr. Cunningham presented the different regulatory approaches and assumptions that could be used to revise the PTS screening criterion. He explained that the staff plans to submit the draft Commission paper to the EDO by May 24, 2000.

The Committee members and the staff discussed the following:

- effects of stresses associated with PTS events and flaw characteristics on the reactor pressure vessel failure probability;

- relationship among the current PTS screening criterion, core damage frequency (CDF), large early-release frequency (LERF), and adequate protection;
- reevaluation of materials fracture toughness curves;
- use of qualitative adequate protection criteria versus quantitative safety goal criteria;
- application of defense in depth;
- use of absolute values of risk versus calculation of changes in risk;
- allocation of risk among accident scenarios;
- differences between CDF and LERF; and
- whether PTS events will result in containment bypass.

Conclusion

This briefing was for information only. The Committee plans to continue its review of this matter at future meetings.

IV. Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"

[Note: Mr. Michael T. Markley was the Designated Federal Official for this portion of the meeting.]

Dr. George Apostolakis, Chairman of the ACRS Subcommittee on Reliability and Probabilistic Risk Assessment, introduced this topic to the Committee. He stated that the purpose of this meeting was to review the staff's efforts in response to the staff requirements memorandum (SRM) dated January 5, 2000 (SECY-99-246), concerning license amendments in which the amendment request complies with the regulations and other license requirements but the staff is concerned that a substantial hazard may exist. Dr. Apostolakis informed the Committee that the Subcommittee would consider the results of the staff's working with internal and external stakeholders to clarify what constitutes a "special circumstance" and the staff's proposed new appendix to NUREG-0800, "Standard Review

Plan," Chapter 19, "Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking: General Guidance," and associated changes to Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

NRC Staff Presentation

Mr. Robert Palla, NRR, led the discussions for the NRC staff. Messrs. Gary Holahan and Richard Barrett, NRR, provided supporting discussion. Significant points raised during the staff presentation include the following:

- In October 1999, the staff issued SECY-99-246, "Proposed Guidelines for Applying Risk-Informed Decisionmaking in License Amendment Reviews," for consideration by the Commission. In that paper, the staff highlighted the need for using risk information in licensing actions that were not submitted to the NRC by licensees as risk-informed initiatives. The staff cited an example involving the electrosluicing steam generator repair at the Union Electric Company's Calloway nuclear plant.
- In an SRM dated January 5, 2000, the Commission approved the staff's approach for initial implementation. The Commission directed the staff to work with internal and external stakeholders to clarify what constitutes a "special circumstance" and to develop guidance that articulates this clarification in a clear and objective manner.
- The staff also issued Regulatory Issue Summary 2000-07 to inform licensees of the interim guidance on the use of risk information by the staff in its review of license amendment requests, including reviews of license amendment requests that are not risk informed.
- The staff proposes to issue the new appendix to SRP Chapter 19 and associated changes to RG 1.174 for public comment in May 2000 and plans to submit the proposed final version of these documents for consideration by the Commission in September 2000.

Industry Presentation

Mr. Biff Bradley of the NEI led the discussions for the industry. Mr. Al Passwater of the Union Electric Company provided supporting discussion. Significant points made during the industry presentation include the following:

- The industry is very sensitive about the potential for risk-informed regulation to be considered mandatory. In particular, the industry is concerned that there will be a proliferation of new regulatory requirements (i.e., additional regulatory burden) that the licensees will have difficulty in meeting with their existing resources (i.e., operating and risk analysis staffs).
- The definition of "special circumstances" needs to be clarified further. The current set of examples provided by the NRC focuses more on process rather than case studies highlighting acceptable/unacceptable conditions. Industry representatives suggested that the use of more examples would be helpful to licensees in better understanding when the NRC might want risk analysis to support a deterministic licensing submittal. Industry representatives also suggested clarifying the definition of responsibility in identifying who gets to decide when a special circumstance exists.

The Committee and the staff extensively discussed the issue of adequate protection. Dr. Apostolakis questioned why the criteria in RG 1.174 are not used as a trigger for agencywide decisions, or as a threshold for adequate protection. He also questioned why the use of risk information could not be considered mandatory. The staff stated that the purpose of this initiative is to address the need for a method to address "special circumstances" when a potential risk increase is posed by a requested licensee action, when the request is not presented as a risk-informed submittal. The staff described the proposed appendix and associated changes to the guidance as a screening tool for evaluating potential unanticipated increases in risk. The staff also noted that adequate protection is still considered to be protection that satisfies regulatory requirements.

Although Drs. Powers and Seale expressed concern that the proposed guidance could be misused or overused by the staff, the Committee expressed general agreement that the proposed guidance would help in making the use of risk information in licensing reviews more predictable. Dr. Powers suggested that the Committee support the staff's proposed issuance of the subject documents for public comment.

Conclusion

The Committee authorized the ACRS Executive Director to issue a memorandum on this matter to the EDO dated May 22, 2000.

V. Proposed Regulatory Guide and Standard Review Plan (SRP) Section
Associated with NRC Code Reviews

[Mrs. Maggalean W. Weston was the Designated Federal Official for this portion of the meeting.]

Dr. Graham B. Wallis, Chairman of the ACRS Subcommittee of Thermal-Hydraulic Phenomena, introduced this topic to the committee. He stated that the purpose of the meeting was to provide the full committee with a status of the development of draft Regulatory Guide DG 1096, "Generic Transient and Accident Analysis Methods" and Standard Review Plan (SRP), Section 15.0.1, "Review of Analytical Computer Codes." A presentation of this subject was made to the subcommittee on April 27, 2000. Dr. Wallis noted that because we do not have full-scale experiments on nuclear reactors, predictions that become a part of the decision making process regarding the results of accidents are based on computer models. Therefore, these models are, for obvious reasons, important.

NRC Staff Presentations

The presentation on DG 1096 was made by Mr. G. Norman Lauben, RES. Mr. Joseph Staudenmeier, NRR, made the presentation on the SRP. The presentation was a shortened version of the one made to the subcommittee on April 27, 2000. Specifically, the staff discussed with the Committee the revisions to the RG and SRP section based on comments made during the subcommittee meeting. The staff stated that issues discussed during the subcommittee meeting would be incorporated into the RG and SRP section, as appropriate. The staff also indicated that the draft guide transient and accident analysis methods address the findings of the Maine Yankee panels and other review groups. The Committee and staff discussed the generic applicability of the code review, and the use of or reference to Code Scaling, Applicability and Uncertainty (CSAU) study. The staff indicated that the RG would apply to other code reviews as well as thermal hydraulics. They also indicated that CSAU was done to evaluate code uncertainties in order to do best estimate calculations.

The staff will provide any revisions to the RG and SRP section to the Committee prior to their issuance for public comment.

Conclusion

The ACRS Executive Director issued a memorandum dated May 22, 2000, to the NRC Executive Director for Operations indicating that the Committee plans to review the final version of the draft RG and SRP section after reconciliation of public comments and therefore, has no objection to staff publishing the draft RG and SRP for public comment.

VI. SECY-00-0062, "Risk-Informed Regulation Implementation Plan"

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

Dr. George Apostolakis stated that the NRC staff has provided the Commission with SECY-00-0062. This SECY describes a summary of the significant accomplishments in the risk informing of regulatory processes and practices since the 1999 update of the PRA implementation plan.

Mr. Thomas King, RES, stated that in March 1999, the General Accounting Office issued a report on the NRC's risk-informed regulation efforts in which it made the following recommendation:

"To help ensure the safe operation of plants and the continued protection of public health and safety in a competitive environment, we recommend that the Commissioners of NRC direct the staff to develop a comprehensive strategy that includes but is not limited to objectives, goals, activities, and time frames for the transition to risk-informed regulation; specifies how the Commission expects to define the scope and implementation of risk-informed regulation; and identifies the manner in which it expects to continue the free exchange of operational information necessary to improve the quality and reliability of risk assessments."

The NRC Chairman responded to this recommendation in a letter to Senator Fred Thompson and others June 18, 1999, indicating that the staff is developing, for Commission approval, a document describing the agency's strategy for risk-informed regulation that will specify the scope and approach for implementation.

Consistent with the NRC Chairman's response, the staff prepared SECY-00-0062, "Risk-Informed Regulation Implementation Plan," to provide the Commission with a summary of significant accomplishments in the risk informing of the regulatory processes and practices, an example of the form and content of the revised PRA implementation plan, and a description of issues that have

affected or may affect the implementation of the Commission's risk-informed activities.

In SECY-99-211, the staff indicated that it would restructure the PRA implementation plan to more clearly describe the risk-informed activities and provide linkage to the agency's Strategic Plan. The staff revised the PRA implementation plan to change it to a risk-informed implementation plan (RIRIP). The name was changed to better characterize the nature and purpose of the plan. In SECY-00-0062, the staff noted that the RIRIP would accomplish the following:

- Be organized to track three principal arenas in the agency's Strategic Plan (Nuclear Reactor Safety, Nuclear Materials Safety, and Nuclear Waste Safety),
- Provide clear objectives and linkages to the PRA Policy Statement and to the agency's Strategic Plan,
- Identify criteria for the selection and prioritization of practices and policies to be risk informed and guidelines for implementation,
- Identify major pieces of work associated with these efforts and related major milestones, including plans for communicating information to stakeholders.

The staff envisions the RIRIP as improving the regulatory process through safety decisionmaking enhanced by the use of PRA insights; through more efficient use of agency resources; and through a reduction in unnecessary burden on licensees. In SECY-00-0062, the staff provided a specific implementation plan in the Nuclear Reactor Safety arena (e.g., modification of the safety goal policy and updating of RG 1.174, the reactor oversight process, 10 CFR Part 50, pressurized thermal shock, fire protection, etc.).

Conclusion

The Committee plans to continue its review of this matter and to follow up on the staff's progress during future meetings.

VII. Operating Event at E. I. Hatch Nuclear Power Plant, Unit 1

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

Mr. John J. Barton, Chairman of the Subcommittee on Plant Operations, introduced the topic to the Committee. He stated that the purpose of this session was to discuss and hear presentations with the representatives of the NRC staff regarding the findings and recommendations of the Augmented Inspection Team (AIT), which investigated the reactor trip event January 26, 2000, at E.I. Hatch Nuclear Power Plant, Unit 1.

NRC Staff Presentations

Mr. Leonard Wert, Team Leader of the AIT, briefly presented the overall event sequence and the findings of the AIT. This event occurred during the shift change at Hatch Unit 1, when Hatch Unit 1 was at 100 percent power. The reactor pressure vessel water level began decreasing as a result of a substantial reduction in the reactor feedwater flow rate following an unexpected closure of the inlet valve to the high-pressure feedwater heater. Later it was determined that the valve closed because of a problem with the valve control switch. The valve closure caused a large reduction in feedwater flow, the reactor water level decreased, and an automatic reactor trip occurred as expected.

The high pressure coolant injection (HPCI) system and the reactor core isolation cooling (RCIC) system automatically actuated and injected water at large flow rates into the reactor as designed. The reactor vessel water level was rapidly recovered. The feedwater pumps and the RCIC system tripped on high level as expected. The HPCI system did not immediately trip on high level and continued to inject water into the reactor for about 1 minute before it tripped. The main steam isolation valves (MSIVs) were then shut by the operators. This action is required by the Emergency Operating Procedures and is intended to prevent water from flooding the main steamlines. However, the reactor vessel water level was high enough so that some water entered the main steamlines.

In accordance with procedures, an operator attempted to open safety relief valves (SRVs) to control reactor pressure, but the expected control panel indications were not received. Later it was determined that the SRVs had actually opened when actuated. The SRV tailpipe (discharge line) temperatures clearly showed that the valves had opened. During the transient, reactor pressure reached a maximum value that was just slightly above normal operating pressure.

The reactor water level was controlled by the operators using the HPCI and RCIC systems. Several attempts to restart the RCIC after it tripped on high level were unsuccessful. This turbine-driven pump tripped on overspeed several times. Water from the main steamlines had entered the line supplying steam to the turbine. The water affected the turbine control system. Procedural guidance and training were not adequate for restarting the tripped system under the existing conditions. The operators did not properly monitor reactor vessel water level and injection system operations. Mr. Wert stated that the AIT concluded that the Shift Technical Advisor did not provide timely assistance to operators when unexpected SRV indications were observed.

Mr. Wert also stated that the NRC staff is considering this event as a significant event that has potential generic complications. The NRC staff is requesting the following review of two issues, including interaction with the BWROG and General Electric as appropriate:

- To what degree should water be allowed to enter the main steamlines at BWRs? Should universal guidance be developed for BWRs with specific criteria directing when MSIVs should closed?
- What is the significance and specific impact of the water in the main steamlines relative to considerations in the design and licensing basis?

Industry Statement

Mr. Lewis Summer, Vice President of Nuclear Operations for E.I. Hatch Nuclear Power Plant, stated that the licensee had initiated broader corrective actions to address operations performance issues and had completed several corrective actions, including revision of the turnover process.

Conclusion

This briefing was held for information only. No action was required.

VIII. Physical Security Requirements for Power Reactors

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

Introduction

Dr. Thomas S. Kress, Chairman of the Regulatory Policy and Practices Subcommittee, stated that assessing the risk of security events is difficult, even though these events may be risk dominant. He noted that design basis threats and a defense-in-depth philosophy are used to establish security requirements and that the staff and licensees conduct inspections and tests to verify compliance with these requirements.

Staff Presentation

Mr. Richard Rosano, NRR, presented a chronology of the staff's efforts to risk inform 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," and to develop a regulatory requirement for the conduct of inspections similar to the Operational Safeguards Response Evaluation (OSRE) program, which has ended. He described how a conditional probabilistic risk analysis can be used to determine the consequences of a security event. Mr. Rosano explained that the staff determined that by delineating performance criteria to be used as the basis for the new physical protection regulations, the staff could negate the need for defining radiological sabotage. He described the industry's Safeguards Performance Assessment (SPA) Program and how it would be used as an interim program until the proposed rulemaking is completed.

The Committee members and the staff discussed how actions taken by one knowledgeable individual who has access to the plant was used in the design concept. They also discussed security event response procedures, differences between the OSRE and SPA programs, licensees' ability to develop security event scenarios, and the use of computers to simulate and analyze armed intervention scenarios.

Nuclear Control Institute Presentation

Mr. Edwin S. Lyman, Nuclear Control Institute, stated that a robust security system must be retained by licensees and verified by the NRC through the use of an OSRE type inspection program. He explained that the staff's allowance of credit for operator actions must be demonstrated. Mr. Lyman stated his opposition to redefining the radiological sabotage in terms of 10 CFR Part 100, "Reactor Site Criteria," dose limits: to allowing the NEI to review and comment on the design basis threat; and to allowing licensees greater oversight of their self-assessment programs. He noted that public citizens cannot participate at the same level as NEI at public meetings because of their lack of resources. The ACRS members and Mr. Lyman discussed why the OSRE program was

canceled, preparation of security response plans, and detection of sabotage committed by an insider.

Nuclear Energy Institute Presentation

Mr. James Davis, NEI, compared the OSRE to baseline inspections. He described the core program and drill evaluations and evaluated exercises. He stated that the security regulations should be revised on the basis of performance insights gained from the OSRE process.

The Committee members and Mr. Davis discussed why licensees need to know the design basis threat, the motivation for recommending a performance-based rule, and examples of deterministic requirements that do not contribute to enhanced security. They also discussed developing defensive strategies against an intelligent adversary and the difficulties in using performance-based inspections to evaluate deterministic rules.

Design Basis Threat (Closed Session)

Ms. Roberta Warren, NMSS, presented the current design basis threat for nuclear reactors. She described how the design basis threat was developed and contrasted it to the design basis threat for production and Department of Energy facilities. Ms. Warren explained threat assessment activities and how they related to revising the design basis threat. The Committee members and Ms. Warren discussed the qualification of NRC threat assessment analysts, predictions for changes in the threat environment, and the threat of an intelligent insider.

Conclusion

This briefing was held for information only.

IX. Executive Session (Open)

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

A. Reconciliation of ACRS Comments and Recommendations

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

- During the discussion of Future Activities, Dr. Wallis indicated that the Thermal-Hydraulic Phenomena Subcommittee is satisfied with the objectives, scope, and direction of the RES PTS thermal-hydraulic research program. The status of this program will be reviewed during a joint Material and Metallurgy/Thermal-Hydraulic Phenomena subcommittee meeting scheduled for September 22, 2000.
- The Committee discussed the response from the EDO dated April 18, 2000, to ACRS comments and recommendations included in its letter dated March 13, 2000, concerning proposed resolution of GI B-17, "Criteria for Safety-Related Operator Actions" and Generic Issue 27, "Manual vs Automated Actions"

The Committee decided it was satisfied with the EDO's response, but expressed concern regarding use of information from ANSI/ANS Standard ANSI/ANS 58.8 - 1994, "Time Response Design Criteria for Safety-Related Operator Actions".

- The Committee discussed the response from the EDO, dated April 21, 2000, to ACRS comments and recommendations included in the ACRS report dated March 13, 2000, concerning SECY-00-0007, "Proposed Staff Plan for Low-Power and Shutdown Risk Analysis Research to Support Risk-Informed Regulatory Decisionmaking."

The Committee decided that it was satisfied with the EDO's response. The Committee plans to continue to evaluate matters related to low-power and shutdown operations as plant incidents and regulatory activities indicate emergent risk significant issues of concern.

- The Committee discussed the response from the EDO, dated April 19, 2000, to ACRS comments and recommendations included in the ACRS report dated March 15, 2000, concerning the revised reactor oversight process (RROP).

The Committee decided that it was satisfied with the EDO's response. In accordance with the Staff Requirements Memorandum dated April 5, 2000, the Committee plans to continue its review the results of the use of performance indicators and the significance determination process subsequent to initial implementation of the RROP.

B. Report on the Meeting of the Planning and Procedures Subcommittee
(Open)

– Review of the Member Assignments and Priorities for ACRS Reports and Letters for the May ACRS Meeting

Member assignments and priorities for ACRS reports and letters for the May ACRS meeting were discussed. Reports and letters that would benefit from additional consideration at a future ACRS meeting were also discussed.

– Anticipated Workload for ACRS Members

The anticipated workload of the ACRS members through July 2000 was discussed. The objectives were: (1) to review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate, (2) to manage the members' workload for these meetings, and (3) to plan and schedule items for ACRS discussion of topical and emerging issues. During this session, the Subcommittee discussed and developed recommendations on the items that require Committee decision.

– Mandatory Use of the Government Sponsored Charge Card

A copy of the April 28, 2000 NRC Yellow Announcement, "Mandatory Use of the Government Sponsored Charge Card for Travel," was discussed. This announcement supersedes all previous announcements on this matter. The mandatory use of the government sponsored charge card for official government travel became effective on May 1, 2000. This card must be used to pay for lodging expenses and for any other expenses that exceed \$75 while on official travel.

– Commission Paper on ACRS/ACNW Self Assessment

A proposed Commission paper on ACRS/ACNW self assessment and a summary matrix of the ACRS letters and reports was distributed to the members for review during the April 2000 ACRS meeting. Comments provided by some members have been incorporated into the final version of these documents. These documents were sent to the Commission on Friday, May 5, 2000. In the future, the Self Assessment, including the matrix of letters, will become a part of the ACRS/ACNW Operating Plan. In going through the process of preparing this document, the ACRS staff recognized the benefit of an ACRS Priority Plan and

recommended that the Committee endorse the preparation of a Priority Plan for CY 2001-2002.

- Division of Responsibilities Between ACRS and ACNW for Reviewing Decommissioning Activities

A paper outlining a division of responsibilities between ACRS and ACNW for reviewing the NRC staff activities in the area of decommissioning was discussed. The Committee agreed that members of the ACRS/ACNW Joint Subcommittee, review the proposal and recommend a course of action. The ACNW reviewed this paper during its March 2000 meeting and concurred with the proposed ACNW activities and assignments.

The NRC received a request from NEI to combine the integrated rulemaking plan (the single rulemaking that would address the issues on emergency planning, financial indemnity, safeguards/physical protection, operator staffing and training requirements, and Backfit Rule applicability that are now being addressed in separate rulemakings) and the rulemaking plan for the consolidation of decommissioning regulation into a single rulemaking. (All of these rulemaking actions are intended to be risk informed.) NEI proposed that the single risk-informed rulemaking consolidating all decommissioning regulations could be completed in about 24 months. The staff and NEI met and discussed the NEI request on May 9, 2000. In addition, it appears that some agreement states may implement decommissioning requirements that are more restrictive than the NRC requirements.

- Meeting with Stakeholders

During the January 2000 retreat, the ACRS discussed ways in which the Committee could interact with stakeholders, including NEI, INPO, and utilities, to obtain information on significant stakeholders' issues. As recommended by the Planning and Procedures Subcommittee, a proposal was developed for such an interaction. The full Committee considered the proposal during and members were requested to provide comments be prepared to agree on a course of action during the May meeting.

- Memorandum of Understanding

The existing Memorandum of Understanding (MOU) between the ACRS and the EDO has not been revised since 1988. Since the Committee practices have changed with regard to reviewing regulatory issues, there is a need to revise the

MOU to reflect the changes in the Committee practices. Accordingly, the current MOU has been revised to make it simpler, concise, and easy to follow. A draft of the revised MOU was sent to the EDO for initial feedback. Since the MOU deals with procedural issues and as the agency and Committee practices change, the MOU will be revised periodically to accommodate these changes, it is recommended that the MOU be signed by the ACRS/ACNW Executive Director.

– Power Uprate Review Guidance

Dr. Cronenberg, ACRS Senior Fellow, has prepared a report on the process being used by the staff in reviewing power uprate applications submitted by licensees. This report has been distributed to the members. In that report, Dr. Cronenberg recommended the need for a standardized and detailed process for use by the staff in reviewing power uprate applications. During the March 2000 meeting, the Planning and Procedures Subcommittee suggested that Dr. Cronenberg obtain information from the staff with regard to ongoing or planned staff activities for standardizing the power uprate review process.

Based on his conversation with the staff, Dr. Cronenberg learned that although some sort of standardized review guidance for power uprate applications was considered, NRR believes that the current process for reviewing such applications is adequate in light of the PWR and BWR Owner Groups' guidance to the licensees with regard to information to be included in the license renewal applications. However, in the future the staff may consider developing detailed guidance for reviewing the power uprate applications.

– Proposed Assignments for Reviewing License Renewal Guidance Documents

The staff is in the process of preparing a Standard Review Plan, Generic Aging Lessons Learned II (GALL II) Report, and a Regulatory Guide associated with license renewal. The Committee needs to complete its review of these documents in November 2000. Dr. Bonaca, Chairman of the Plant License Renewal Subcommittee, has proposed assignments for the members for reviewing these documents. These documents will be provided to the members during August 2000.

– Risk From Low Power and Shutdown

Dr. Savio has been tasked with providing an assessment of the ACRS activities and accomplishments in the area of low power shutdown risk and providing recommendations as to a strategy for future ACRS involvement in this area.

- NRC Annual Performance Report

The Government Performance and Results Act (GPRA) requires federal agencies to produce annual performance reports, the first of which was due by March 31, 2000. The purpose of these reports is to provide the Congress and the American public with information which can be used to assess the effectiveness of the particular agency. The Mercatus Center (George Mason University) has recently issued a report evaluating 24 agencies' reports and performance as described in the reports. The NRC, DOE, FEMA, and DOT were included in this group of agencies.

- Items Proposed by Dr. Powers

The following items, proposed by Dr. Powers, were discussed:

- a) Outstanding obligations to the Commission based on SRMs.
- b) ACRS report to the Commission on the NRC Safety Research Program
- c) License renewal workload (should we have two Subcommittees to handle workload?)

- Meeting with Individual Commissioners

Dr. Powers met with individual Commissioners to discuss items of mutual interest. He will provide a brief report to the Committee on topics discussed and follow-up items resulting from these meetings.

C. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 473rd ACRS Meeting, June 7-9, 2000.

The 472nd ACRS meeting was adjourned at 12:27 p.m. on May 13, 2000.



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

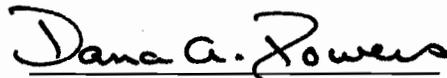
July 21, 2000

MEMORANDUM TO: Sherry Meador, Technical Secretary
Advisory Committee on Reactor Safeguards

FROM: Dana A. Powers, Chairman
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFIED MINUTES OF THE 472nd MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
(ACRS), MAY 11-13, 2000

I certify that based on my review of the minutes from the 472nd ACRS full Committee meeting, and to the best of my knowledge and belief, I have observed no substantive errors or omissions in the record of this proceeding subject to the comments noted below.


Dana A. Powers, Chairman

July 11, 2000

Date



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

July 11, 2000

MEMORANDUM TO: ACRS Members

FROM: Sherry Meador *Sherry Meador*
 Technical Secretary

SUBJECT: PROPOSED MINUTES OF THE 472nd MEETING OF THE
 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS -
 MAY 11-13, 2000

Enclosed are the proposed minutes of the 472nd meeting of the ACRS. This draft is being provided to give you an opportunity to review the record of this meeting and provide comments. Your comments will be incorporated into the final certified set of minutes as appropriate.

Attachment:
As stated

Non-Radiological Environmental Assessment

The licensee reviewed the non-radiological environmental impacts of power uprate based on information submitted in the Environmental Report—Operating License Stage to support original licensing of LaSalle, Units 1 and 2, the Final Environmental Protection Statement (NUREG-0486), the requirements of the Environmental Protection Plan and the National Pollutant Discharge Elimination System (NPDES) Permit. The proposed power uprate will not affect compliance with NPDES requirements.

As a result of power uprate to 105 percent of current licensed core power, normal heat loads to the cooling lake will increase primarily from an increase in heat load from the condenser and from other increased heat loads rejected by the plant service water system. An increase in steam and condensate flow will result in a corresponding increase in the net heat rejection to the cooling lake. Based on a condenser backpressure of 3.5 inches Hg, a 1 degree Fahrenheit rise in circulating water temperature is expected relative to the current temperature rise value of approximately 24 degrees Fahrenheit. This, in turn, will raise cooling lake temperature, thus, increasing circulating water inlet temperature to the condenser. The lake is expected to experience a 0.4 degree increase in temperature on a long-term basis. Based on this minimal temperature rise, thermal shock to the fish population of the lake is not expected. The effect on lake evaporation, makeup, and blowdown was evaluated and found to be acceptable. The effect on cooling lake total dissolved solids was determined to remain within the licensee's administrative limit of 750 ppm.

The LaSalle cooling lake discharges into the Illinois River. ComEd evaluated the effects of power uprate on the temperature of the water in the river in the vicinity of the cooling lake blowdown and concluded that significant margin exists between the maximum expected edge of mixing zone temperature and imposed regulatory limits.

ComEd also evaluated the noise effects due to operation at uprated power and determined that, because the turbine and reactor building supply and exhaust fans will continue to operate at current speeds and noise levels at uprated conditions, the overall noise level will not increase.

With regard to potential non-radiological impacts, the proposed action does not change the method of

generating electricity at LaSalle, Units 1 and 2, nor the methods of handling effluents from the environment or effluents to the environment. No changes to land use would result and the proposed action does not involve any historic sites. Therefore, no new or different types of non-radiological environmental impacts are expected. Accordingly, the Commission concludes that there are no significant non-radiological environmental impacts associated with the proposed action.

Alternatives to the Proposed Action

As an alternative to the proposed action, the staff considered denial of the proposed action (*i.e.*, the "no-action" alternative). Denial of the application would result in no significant change in current environmental impacts and would reduce the operational flexibility. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources

This action does not involve the use of any resources not previously considered in the Final Environmental Statement for LaSalle County Station, Units 1 and 2.

Agencies and Persons Consulted

In accordance with its stated policy, on March 23, 2000, the staff consulted with the Illinois State official, Mr. Frank Nizeolik of the Illinois Department of Nuclear Safety, regarding the environmental impact of the proposed action. The State official had no comments.

Finding of No Significant Impact

Based upon the environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated July 14, 1999, as supplemented on January 21, February 15, February 23, March 10, March 24, March 31, and April 7, 2000, which are available for public inspection at the Commission's Public Document Room, The Gelman Building, 2120 L Street, NW., Washington, DC, and accessible electronically through the ADAMS Public Electronic Reading Room link at the NRC Web site (<http://www.nrc.gov>)

Dated at Rockville, Maryland this 12th day of April 2000.

For the Nuclear Regulatory Commission.
Anthony J. Mendiola,
Chief, Section 2, Project Directorate III,
Division of Licensing Project Management,
Office of Nuclear Reactor Regulation.
 [FR Doc. 00-9961 Filed 4-20-00; 8:45 am]
 BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards; Meeting Notice

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 May 11-13, 2000, in Conference Room T-2B3, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the *Federal Register* on Thursday, October 14, 1999 (64 FR 55787).

Thursday, May 11, 2000

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

8:35 A.M.-10 A.M.: Initiatives Related to Risk-Informed Technical Specifications (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and industry groups regarding initiatives related to risk-informed technical specifications, initial industry submittals on risk-informed technical specifications, and related matters.

10:15 A.M.-11:45 A.M.: Potential Revisions to the Pressurized Thermal Shock (PTS) Acceptance Criterion (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding a draft Commission Paper that describes potential revisions to the PTS acceptance criterion.

12:45 P.M.-2:15 P.M.: Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding proposed revisions to Regulatory Guide 1.174 and associated guidance on the use of risk information in license amendment reviews.

2:30 P.M.-4:00 P.M.: Proposed Regulatory Guide and Standard Review Plan (SRP) Section Associated with NRC Code Reviews (Open)—The Committee

will hear presentations by and hold discussions with representatives of the NRC staff regarding proposed Regulatory Guide and SRP Section associated with the NRC staff's review of the analytical codes.

4 P.M.-5 P.M.: Break and Preparation of Draft ACRS Reports (Open)—Cognizant ACRS members will prepare draft reports for consideration by the full Committee.

5 P.M.-7 P.M.: Discussion of Proposed ACRS Reports (Open)—The Committee will discuss a proposed ACRS report on matters considered during this meeting. In addition, the Committee will discuss a proposed ACRS report on the Human Performance Program.

Friday, May 12, 2000

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

8:35 A.M.-10 A.M.: SECY-00-0062, Risk-Informed Regulation Implementation Plan (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding a risk-informed regulation implementation plan described in SECY-00-0062.

10:15 A.M.-11:30 A.M.: Operating Event at E.I. Hatch Nuclear Power Plant, Unit 1 (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the findings and recommendations of the Augmented Inspection Team, which investigated the January 26, 2000 reactor trip event at E.I. Hatch Nuclear Power Plant, Unit 1.

11:30 A.M.-11:45 A.M.: Reconciliation of ACRS Comments and Recommendations (Open)—The Committee will discuss the responses from the NRC Executive Director for Operations (EDO) to comments and recommendations included in recent ACRS reports and letters. The EDO responses are expected to be made available to the Committee prior to the meeting.

12:45 P.M.-2:15 P.M.: Physical Security Requirements for Power Reactors (Open/Closed)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the status of revising the physical security requirements for power reactors by incorporating insights gained from threat assessment activities being conducted by the staff in coordination with other Federal agencies.

Note: A portion of this session will be closed to discuss safeguards information.

2:30 P.M.-2:45 P.M.: Future ACRS Activities (Open)—The Committee will discuss the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future meetings.

2:45 P.M.-3:30 P.M.: Report of the Planning and Procedures Subcommittee (Open)—The Committee will hear a report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business.

3:30 P.M.-4:30 P.M.: Break and Preparation of Draft ACRS Reports (Open)—Cognizant ACRS members will prepare draft reports for consideration by the full Committee.

4:30 P.M.-7 P.M.: Discussion of Proposed ACRS Reports (Open)—The Committee will discuss proposed ACRS reports.

Saturday, May 13, 2000

8:30 A.M.-2 P.M.: Discussion of Proposed ACRS Reports (Open)—The Committee will continue its discussion of proposed ACRS reports.

1:30 P.M.-2 P.M.: Miscellaneous (Open)—The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACRS meetings were published in the *Federal Register* on September 28, 1999 (64 FR 52353). In accordance with these procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. 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 Mr. Sam Duraiswamy, ACRS, five days before the meeting, if possible, so that appropriate arrangements can be made to allow 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 Mr. Sam Duraiswamy 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 Mr. Sam Duraiswamy if such rescheduling would result in major inconvenience.

In accordance with Subsection 10(d) P.L. 92-463, I have determined that it is necessary to close a portion of this meeting noted above to discuss safeguards information per 5 U.S.C. 552b(c)(3).

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor, can be obtained by contacting Mr. Sam Duraiswamy (telephone 301/415-7364), between 7:30 a.m. and 4:15 p.m., EDT. ACRS meeting agenda, meeting transcripts, and letter reports are available for downloading or viewing on the internet at <http://www.nrc.gov/ACRSACNW>.

Videoteleconferencing service is available for observing open sessions of ACRS meetings. Those wishing to use this service for observing ACRS meetings should contact Mr. Theron Brown, ACRS Audio Visual Technician (301-415-8066), between 7:30 a.m. and 3:45 p.m., EDT, at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment facilities that they use to establish the videoteleconferencing link. The availability of videoteleconferencing services is not guaranteed.

Date: April 17, 2000.

Andrew L. Bates,
Advisory Committee Management Officer.
[FR Doc. 00-9960 Filed 4-20-00; 8:45 am]
BILLING CODE 7590-01-P

SECURITIES AND EXCHANGE COMMISSION

Submission for OMB Review; Comment Request

Upon Written Request Copies Available From: Securities and Exchange Commission, Office of Filings and Information Services, Washington, DC 20549.

Survey on Reciprocal Subpoena Enforcement: SEC File No. 270-479, OMB Control No. 3235-new.

Notice is hereby given that, pursuant to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*), the Securities and Exchange Commission ("Commission") has submitted to the Office of Management and Budget a

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

April 17, 2000

SCHEDULE AND OUTLINE FOR DISCUSSION
472nd ACRS MEETING
MAY 11-13, 2000

**THURSDAY, MAY 11, 2000, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,
 ROCKVILLE, MARYLAND**

- 1) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open)
 - 1.1) Opening statement (DAP/JTL/SD)
 - 1.2) Items of current interest (DAP/NFD/SD)
 - 1.3) Priorities for preparation of ACRS reports (DAP/JTL/SD)

- 2) 8:35 - 10:00 A.M. Initiatives Related to Risk-Informed Technical Specifications (Open) (JDS/GA/MTM)
 - 2.1) Remarks by the Subcommittee Chairman
 - 2.2) Briefing by and discussions with representatives of the NRC staff and industry groups regarding initiatives related to risk-informed technical specifications, initial industry submittals on risk-informed technical specifications, and related matters.

- 10:00 - 10:²⁰15 A.M. *****BREAK*****

- 3) 10:²⁰15 - 11:45 A.M. Potential Revisions to the Pressurized Thermal Shock (PTS) Acceptance Criterion (Open) (WJS/NFD)
 - 3.1) Remarks by the Subcommittee Chairman
 - 3.2) Briefing by and discussions with representatives of the NRC staff regarding a draft Commission Paper that describes potential revisions to the PTS acceptance criterion.

Representatives of the nuclear industry will provide their views, as appropriate.

- 11:45 - 12:45 P.M. *****LUNCH*****

- 4) 12:45 - 2:²⁵15 P.M. Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (Open) (GA/MTM)
 - 4.1) Remarks by the Subcommittee Chairman
 - 4.2) Briefing by and discussions with representatives of the NRC staff regarding proposed revision to Regulatory Guide 1.174 and an associated guidance on the use of risk information in license amendment reviews.

Representatives of the nuclear industry will provide their views, as appropriate.

²⁵ 2:15 - ⁴⁰ 2:30 P.M.

BREAK

5) ⁴⁰ 2:30 - ⁰⁷ 4:00 P.M.

Proposed Regulatory Guide and Standard Review Plan (SRP)
Section Associated with NRC Code Reviews (Open) (GBW/PAB)

- 5.1) Remarks by the Subcommittee Chairman
- 5.2) Briefing by and discussions with representatives of the NRC staff regarding proposed Regulatory Guide and SRP Section associated with the NRC staff's review of the analytical codes.

6) ⁵⁰ 4:00 - ¹⁰ 5:00 P.M.

Break and Preparation of Draft ACRS Reports

Cognizant ACRS members will prepare draft reports for consideration by the full Committee.

7) ¹⁰ 5:00 - 7:00 P.M.

Discussion of Proposed ACRS Reports (Open)

Discussion of proposed ACRS reports on:

- 7.1) Risk-Informed Technical Specifications (JDS/GA/MTM)
- 7.2) Potential Revisions to the Pressurized Thermal Shock Acceptance Criterion (WJS/NFD)
- 7.3) Proposed Revision to Regulatory Guide 1.174 (GA/MTM)
- 7.4) Proposed Regulatory Guide and Standard Review Plan Section Associated with NRC Staff Code Reviews (GBW/PAB) - *Larkinsgram*
- 7.5) Human Performance Program (GA/NFD)

5:30-6:20

*Joint S/C letter
5:10-5:30
(draft final)*

FRIDAY, MAY 12, 2000, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

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

9) 8:35 - ^{9:50} 10:00 A.M. SECY-00-0062, Risk-Informed Regulation Implementation Plan (Open) (GA/MME)

- 9.1) Remarks by the Subcommittee Chairman
- 9.2) Briefing by and discussions with representatives of the NRC staff regarding risk-informed regulation implementation plan that is described in SECY-00-0062.

Representatives of the nuclear industry will provide their views, as appropriate.

^{9:50} 10:00 - 10:15 A.M.

BREAK

10) 10:15 - ³⁵ 11:30 A.M.

Operating Event at E.I. Hatch Nuclear Power Plant, Unit 1 (Open) (JJB/AS)

- 10.1) Remarks by the Subcommittee Chairman

- 10.2) Briefing by and discussions with representatives of the NRC staff regarding the findings and recommendations of the Augmented Inspection Team, which investigated the January 26, 2000 reactor trip event at E. I. Hatch Nuclear Power Plant, Unit 1.

Representatives of the E. I. Hatch Licensee may provide their views, as appropriate.

- 11) 11:³⁵~~30~~ - 11:⁴³~~45~~ A.M.

Reconciliation of ACRS Comments and Recommendations (Open)
(DAP, et al./SD, et al.)

Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

11:45 - 12:45 P.M.

LUNCH

- 12) 12:45 - 12:^{3:05}~~45~~ P.M.

Physical Security Requirements for Power Reactors (Open/Closed)
(TSK/NFD)

12.1) Remarks by the Subcommittee Chairman

12.2) Briefing by and discussions with representatives of the NRC staff regarding the status of revising the physical security requirements for power reactors by incorporating insights gained from threat assessment activities being conducted by the staff in coordination with other Federal agencies.

[NOTE: A portion of this session will be closed to discuss safeguards information.]

13) 3:05 - 3:20
2:15 - 2:30 P.M.

BREAK

- 13) 3:20 - 3:30
2:30 - 2:45 P.M.

Future ACRS Activities (Open) (DAP/JTL/SD)

Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee.

- 14) 3:30 - 4:10
2:45 - 3:30 P.M.

Report of the Planning and Procedures Subcommittee (Open)
(DAP/JTL)

Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business.

- 15) 3:30 - 4:30 P.M.

Break and Preparation of Draft ACRS Reports

Cognizant ACRS members will prepare draft reports for consideration by the full Committee.

- 16) 4:10 - 5:30
4:30 - 7:00 P.M.

Discussion of Proposed ACRS Reports

Discussion of proposed ACRS reports on:

- 16.1) Risk-Informed Regulation Implementation Plan (GA/MME)
16.2) Risk-Informed Technical Specifications (JDS/GA/MTM)

2:15-3:05
CLOSED

- 16.3) Potential Revisions to the Pressurized Thermal Shock Acceptance Criterion (WJS/NFD)
- 16.4) Proposed Revision to Regulatory Guide 1.174 (GA/MTM)
- 16.5) Proposed Regulatory Guide and Standard Review Plan Section Associated with NRC Staff Code Reviews (GBW/PAB)
- 4:15-5:05 16.6) Human Performance Program (GA/NFD)

SATURDAY, MAY 13, 2000, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 17) 8:30 - ^{12:27}~~12:30~~ P.M. Discussion of Proposed ACRS Reports (Open)
Continue discussion of proposed ACRS reports listed under Item 16.
- 12:30 - 1:30 P.M. *****LUNCH*****
- 18) ~~1:30 - 2:00 P.M.~~ Miscellaneous (Open) (DAP/JTL)
~~Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.~~

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

472nd ACRS MEETING May 11-13, 2000

NRC STAFF (May 11, 2000)

G. Millman, OEDO
M. Reinhart, NRR
B. Dennig, NRR
J. Foster, NRR
W. Beckner, NRR
N. Gilles, NRR
S. Newberry, NRR
E. McKenna, NRR
G. Meneinsky, NRR
B. Palla, NRR
G. Parry, NRR
S. Wong, NRR
J. Williams, NRR
S. Dinsmore, NRR
R. Caruso, NRR
J. Wermiel, NRR
J. Staudenmeier, NRR
R. Landry, NRR
T. Collins, NRR
N. Laube, RES
J. Costello, RES
J. Mitchell, RES
F. Eltawila, RES
E. Hackett, RES
R. Woods, RES
S. Malik, RES
E. Thornsby, RES
P. Lewis, RES
N. Siu, RES
M. DiMarto, RES

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

N. Chapman, Bechtel
F. Saba, NUSIS/Scientech
H. Fontecilla, VA Power
B. Bradley, NEI
R. Gamble, Sartrex
A. Passwater, Ameren VE

NRC STAFF (May 12, 2000)

R. Barrett, NRR
J. Hyslap, NRR
J. Lee, NRR
S. Dinsmore, NRR
S. West, NRR
E. McKenna, NRR
S. Wong, NRR
D. Terao, NRR
G. Thomas, NRR
G. Hammer, NRR
L. Olshan, NRR
T. Koshy, NRR
V. Hodge, NRR
D. O'Neal, NRR
L. Marsh, NRR
M. Jamcochian, NRR
B. Boger, NRR
G. Tracy, NRR
J. Rosenthal, RES
A. Ramey-Smith, RES
J. Mitchell, RES
D. Marksberry, RES
E. Christenberry, RES
L. Wert, Jr., RII
P. Brockman, NMSS
M. Weber, NMSS
R. Warren, NMSS
J. Davis, NMSS
A. Davis, NMSS

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

F. Saba, NUSIS/Scientech
L. Sunner, Southern Nuclear-Plant Hatch
A. Farruk, Southern Nuclear-Plant Hatch
J. Davis, NEI



UNITED STATES
NUCLEAR REGULATORY COMMISSION
 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
 WASHINGTON, D.C. 20555-0001
 June 1, 2000

SCHEDULE AND OUTLINE FOR DISCUSSION
473rd ACRS MEETING
JUNE 7-9, 2000

**WEDNESDAY, JUNE 7, 2000, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,
 ROCKVILLE, MARYLAND**

- 1) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open)
 1.1) Opening statement (DAP/JTL/SD)
 1.2) Items of current interest (DAP/NFD/SD)
 1.3) Priorities for preparation of ACRS reports (DAP/JTL/SD)
- 2) 8:35 - 10:00 A.M. Proposed Resolution of Generic Safety Issue-173A, "Spent Fuel Storage Pool for Operating Facilities" (Open) (TSK/MME)
 2.1) Remarks by the Subcommittee Chairman
 2.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed resolution of Generic Safety Issue-173A.
- Representatives of the nuclear industry will provide their views, as appropriate.
- 10:00 - 10:15 A.M. *****BREAK*****
- 3) 10:15 - 11:45 A.M. Regulatory Effectiveness of the Station Blackout Rule (Open) (MVB/NFD/AS)
 3.1) Remarks by the Subcommittee Chairman
 3.2) Briefing by and discussions with representatives of the NRC staff regarding the results of the review performed by the staff to determine the regulatory effectiveness of the Station Blackout Rule.
- Representatives of the nuclear industry will provide their views, as appropriate.
- 11:45 - 12:45 P.M. *****LUNCH*****
- 4) 12:45 - 2:15 P.M. Proposed Final Standard Review Plan Section and Regulatory Guide Associated with the Revised Source Term Rule (Open) (TSK/PAB/MWW)
 4.1) Remarks by the Subcommittee Chairman
 4.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed final Standard Review Plan Section and Regulatory Guide associated with the application of the revised source term for operating nuclear power plants.

Representatives of the nuclear industry will provide their views, as appropriate.

- 2:15 - 2:30 P.M. *****BREAK*****
- 5) 2:30 - 4:30 P.M. Assessment of the Quality of Probabilistic Risk Assessments (PRAs)
(Open) (GA/MTM)
- 5.1) Remarks by the Subcommittee Chairman
- 5.2) Briefing by and discussions with representatives of the NRC staff regarding the staff's proposal to address PRA quality until the industrial standards have been completed, including the potential role of industry PRA certification process.
- Representatives of the nuclear industry will provide their views, as appropriate.
- 6) 4:30 - 5:30 P.M. Break and Preparation of Draft ACRS Reports (Open)
Cognizant ACRS members will prepare draft reports, as needed, for consideration by the full Committee.
- 7) 5:30 - 7:00 P.M. Discussion of Proposed ACRS Reports (Open)
Discussion of proposed ACRS reports on:
- 7.1) Proposed Resolution of Generic Safety Issue-173A, "Spent Fuel Storage Pool for Operating Facilities" (TSK/MME)
- 7.2) Proposed Final Standard Review Plan Section and Regulatory Guide Associated with the Revised Source Term Rule (TSK/PAB/MWW)
- 7.3) Regulatory Effectiveness of the Station Blackout Rule (tentative) (MVB/NFD)

THURSDAY, JUNE 8, 2000, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 8) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (DAP/SD)
- 9) 8:35 - 10:00 A.M. Performance-Based Regulatory Initiatives (Open) (JDS/MTM)
- 9.1) Remarks by the Subcommittee Chairman
- 9.2) Briefing by and discussions with representatives of the NRC staff regarding a draft Commission Paper associated with performance-based regulatory initiatives and related matters.

Representatives of the nuclear industry will provide their views, as appropriate.

10:00 - 10:15 A.M. *BREAK*****

- 10) 10:15 - 11:30 A.M. Use of Industry Initiatives in the Regulatory Process (Open)
(JJB/NFD)
- 10.1) Remarks by the Subcommittee Chairman
- 10.2) Briefing by and discussions with representatives of the NRC staff regarding use of industry initiatives in the regulatory process.

Representatives of the nuclear industry will provide their views, as appropriate.

11) 11:30 - 12:00 Noon

Safety Culture at Operating Nuclear Power Plants (Open)
(GA/NFD/JS)

- 11.1) Remarks by the Subcommittee Chairman
- 11.2) Briefing by and discussions with Mr. Sorensen, ACRS Senior Fellow, regarding the safety culture at operating nuclear power plants.

Representatives of the NRC staff will provide their views, as appropriate.

12:00 - 1:00 P.M.

*****LUNCH*****

12) 1:00 - 1:30 P.M.

Visit to Davis Besse Nuclear Power Plant and Meeting with NRC Region III Personnel (Open) (JJB/AS)

- 12.1) Remarks by the Subcommittee Chairman
- 12.2) Briefing by and discussion with Mr. Singh, ACRS Senior Staff Engineer, regarding the proposed schedule for touring the Davis Besse Nuclear Power Plant, specific plant areas to be visited, proposed topics for discussion with representatives of the licensee, and the NRC Region III Office.

13) 1:30 - 2:00 P.M.

Proposed Plan and Assignments for Reviewing License Renewal Guidance Documents (Open) (MVB/NFD)

Discussion of the proposed plan and member assignments for reviewing the license renewal guidance documents (Standard Review Plan, Regulatory Guide, and Generic Aging Lessons Learned II Report).

14) 2:00 - 2:15 P.M.

Reconciliation of ACRS Comments and Recommendations (Open) (DAP, et al./SD, et al.)

Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

15) 2:15 - 3:00 P.M.

Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (DAP/JTL/SD)

- 15.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS Meetings.
- 15.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, and organizational and personnel matters relating to the ACRS.

16) 3:00 - 4:00 P.M.

Break and Preparation of Draft ACRS Reports (Open)

Cognizant ACRS members will prepare draft reports, as needed, for consideration by the full Committee.

- 17) 4:00 - 7:00 P.M. Discussion of Proposed ACRS Reports
 Discussion of proposed ACRS reports on:
- 17.1) Assessment of PRA Quality (GA/MTM)
 - 17.2) Proposed Resolution of Generic Safety Issue-173A, "Spent Fuel Storage Pool for Operating Facilities" (TSK/MME)
 - 17.3) Regulatory Effectiveness of the Station Blackout Rule (tentative) (MVB/NFD)
 - 17.4) Proposed Final Standard Review Plan Section and Regulatory Guide Associated with the Revised Source Term Rule (TSK/PAB/MWW)
 - 17.5) Performance-Based Regulatory Initiatives (tentative) (JDS/MTM)
 - 17.6) Use of Industry Initiatives in the Regulatory Process (JJB/NFD)
 - 17.7) Safety Culture at Nuclear Power Plants (tentative) (GA/NFD/JS)

FRIDAY, JUNE 9, 2000, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 18) 8:30 - 2:30 P.M. Discussion of Proposed ACRS Reports (Open)
 Continue discussion of proposed ACRS reports listed under Item 17.
- 12:00 - 1:00 P.M. *****LUNCH*****
- 19) 2:30 - 3:00 P.M. Miscellaneous (Open) (DAP/JTL)
 Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

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 V
LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE
472nd ACRS MEETING
May 11-13, 2000

[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. Items of Interest, dated May 11-13, 2000

- 2 Initiatives Related to Risk-Informed Technical Specifications
 2. TSTF 358 - Missed Surveillances presentation by NEI [Viewgraphs]
 3. Initiative 2 - Missed Surveillances presentation by NEI [Viewgraphs]
 4. Risk-Informed Technical Specifications, presentation by NRR [Viewgraphs]

- 3 Potential Revisions to the Pressurized Thermal Shock (PTS) Acceptance Criterion
 5. Potential Revisions to PTS Screening Criterion presentation by RES [Viewgraphs]

- 4 Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"
 6. Guidelines for Using Risk Information in Regulatory Decisionmaking, presentation by NRR [Viewgraphs]
 7. Requests for Risk Information, presentation by NEI [Viewgraphs]

- 5 Proposed Regulatory Guide and Standard Review Plan (SRP) Section Associated with NRC Code Reviews
 8. SRP Development for T/H Code Reviews, presentation by J. Staudenmeier, NRR [Viewgraphs]
 9. Consultants Report, April 27, 2000, T/H Phenomena Subcommittee meeting, report from ACRS Consultant V. Schrock; excerpt from memorandum to G. Wallis from N. Zuber, ACRS Consultant, Subject: The Effect of Deregulation on NRC's Capabilities in the Field of Thermal-Hydraulics, dated April 6, 2000 [Handout 5-1]
 10. Draft Regulatory Guide DG-1096 Transient and Accident Analysis Methods for Chapter 15 Events presentation by N. Lauben, RES [Viewgraphs]

- 9 SECY-00-0062, Risk-Informed Regulation Implementation Plan
 11. Risk-Informed Regulation - Implementation Plan presentation by RES, NRR [Viewgraphs]

- 10 Operating Event at E. I. Hatch Nuclear Power Plant, Unit 1
 12. Hatch Unit 1 Scram with Complications (AIT) presentation by NRR, Region II [Viewgraphs]

- 11 Reconciliation of ACRS Comments and Recommendations
 13. Reconciliation of ACRS Comments and Recommendations [Handout #11.1]

- 12 Physical Security Requirements for Power Reactors
 14. Paper by Edwin Lyman, Nuclear Control Institute. "The Status of Reactor Safeguards Initiatives - Background: The OSRE Program and Public Confidence," revised May 9, 2000 [Handout 12.1]
 15. Overview presentation by NRR [Viewgraphs]
 16. Self-Assessment Program presentation by NEI [Viewgraphs]

- 13 Future ACRS Activities
 17. Future ACRS Activities - 473rd ACRS Meeting, June 7-9, 2000 [Handout #12.1]

- 14 Report of the Planning and Procedures Subcommittee
 18. Final Draft Minutes of Planning and Procedures Subcommittee Meeting - May 10, 2000 [Handout #14.1]

MEETING NOTEBOOK CONTENTS

TAB

DOCUMENTS

- 2 Initiatives Related to Risk-Informed Technical Specifications
 1. Table of Contents
 2. Proposed Schedule
 3. Status Report, dated May 11, 2000
 4. Letter dated November 17, 1999, from James W. Davis, Nuclear Energy Institute, to William D. Beckner, NRC, Subject: Letter forwarding Technical Specification Task Force Travelers
 5. Letter dated December 16, 1999, from James P. Riccio, Public Citizen, to ACRS Subcommittee on Reliability and Probabilistic Risk Assessment, Subject: Statement concerning Risk-Informed Technical Specifications

- 3 Potential Revisions to the Pressurized Thermal Shock (PTS) Acceptance Criterion
 6. Table of Contents
 7. Proposed Schedule
 8. Status Report dated May 11, 2000
 9. Draft SECY, "Reevaluation of the Pressurized Thermal Shock Rule (10 CFR 50.61) Screening Criterion," received April 20, 2000 [**predecisional information**]

- 4 Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"
 10. Table of Contents
 11. Proposed Schedule
 12. Status Report dated May 11, 2000
 13. Memorandum dated April 3, 2000, from Gary M. Holahan, NRR, to John T. Larkins, Executive Director, ACRS, Subject: Modifications to Regulatory Guidance Documents Regarding Use of Risk-Informed Decisionmaking in License Amendment Reviews
 14. US Nuclear Regulatory Commission, Regulatory Issue Summary 2000-07, Use of Risk-Information in License Amendment Reviews
 15. Memorandum dated January 5, 2000, from Annette Vietti-Cook, Secretary, NRC, to William D. Travers, Executive Director for Operations, Subject: Staff Requirements - SECY-99-246 - Proposed Guidelines for Applying Risk-Informed Decisionmaking in License Amendment Reviews
 16. Report dated October 8, 1999, from Dana A. Powers, Chairman, ACRS, to

Greta Joy Dicus, Chairman, NRC, Subject: Draft Commission Paper Regarding Proposed Guidelines for Applying Risk-Informed Decisionmaking in License Amendment Reviews

17. Letter dated November 15, 1999, from William D. Travers, Executive Director for Operations, NRC, to Dana A. Powers, Chairman, ACRS, Subject: Draft Commission Paper Regarding Proposed Guidelines for Applying Risk-Informed Decisionmaking in License Amendment Reviews
- 5 Proposed Regulatory Guide and Standard Review Plan (SRP) Section Associated with NRC Code Reviews
18. Table of Contents
 19. Presentation Schedule
 20. Project Status Report
 21. Memorandum from G. Wallis, "Draft Comments on Draft Regulatory Guide DG-1096, 'Transient and Accident Analysis Methods,'" dated April 25, 2000
 22. Working Copy, Minutes of April 27, 2000, T/H Phenomena Subcommittee Meeting, completed May 4, 2000
 23. Memorandum to J. T. Larkins, ACRS, from G. M. Holahan, NRR, transmitting draft Regulatory Guide and Standard Review Plan Section on Analytical Computer Codes, dated April 14, 2000
 24. Excerpt from Certified Copy of the Minutes of the November 17, 1999 meeting of the T/H/ Phenomena Subcommittee, dated December 1, 1999
 25. Excerpt from Certified Copy of the Minutes of the December 16-17, 1998 meeting of the T/H Phenomena Subcommittee, dated D\February 22, 1999
- 9 SECY-00-0062, Risk-Informed Regulation Implementation Plan
26. Table of Contents
 27. Proposed Schedule
 28. Status Report
 29. SECY-00-0062, Risk-Informed Regulation Implementation Plan, dated March 16, 2000
 30. SECY-99-211, Status Report on the Probabilistic Risk Assessment Implementation Plan, dated August 18, 1999
- 10 Operating Event at E. I. Hatch Nuclear Power Plant, Unit 1
31. Table of Contents
 32. Proposed Schedule
 33. Status Report
 34. NRC Augmented Inspection Team Report 50-321/00-01 and 50-366/00-01 dated February 28, 2000
 35. Licensee Event Report No. HL-5895, Subject: Reduction in Reactor

Feedwater Flow Results in Automatic Reactor Shutdown on Low Water Level dated February 25, 2000

36. Memorandum to Ledyard B. Marsh, Chief, Events Assessment, Generic Communications, and Non-Power Reactors Branch, NRR, from Loren R. Plisco, Director of Reactor Projects, Region II, Subject: Generic Issues Identified During the Hatch AIT on the January 26, 2000 Plant Trip dated April 14, 2000
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 42. SECY-00-0063, "Staff Re-evaluation of Power Reactor Physical Protection Regulations and Position on a Definition of Radiological Sabotage," dated March 9, 2000
 43. Memorandum dated November 22, 1999, from Annette Vietti-Cook, Secretary, NRC, to William D. Travers, Subject: Staff Requirements - SECY-99-241 - "Rulemaking Plan, Physical Security Requirements for Exercising Power Reactor Licensees' Capability to Respond to Safeguards Contingency Events"
 44. SECY-99-241, "Rulemaking Plan, Physical Security Requirements for Exercising Power Reactor Licensees' Capability to Respond to Safeguards Contingency Events," dated October 5, 1999

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

472nd FULL COMMITTEE MEETING

May 11, 2000

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ITEMS OF INTEREST

472ND ACRS MEETING

MAY 11-13, 2000

**ITEMS OF INTEREST
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
472ND MEETING
MAY 11-13, 2000**

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UNITED STATES NUCLEAR REGULATORY COMMISSION

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No. S-00-12

April 13, 2000

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**OPENING STATEMENT
BY
RICHARD A. MESERVE, CHAIRMAN
U.S. NUCLEAR REGULATORY COMMISSION
AT THE
ANNUAL PRESS CONFERENCE
11:00 A.M. APRIL 13, 2000
COMMISSION MEETING ROOM
ONE WHITE FLINT NORTH**

Good morning. Before I take your questions, I want to make a brief statement about three important NRC initiatives: (1) our new reactor oversight process, (2) license renewal, and (3) risk informed regulation. The NRC is pursuing these regulatory initiatives with the objective of achieving greater effectiveness and efficiency as an independent regulatory agency whose overriding mission is to protect public health and safety.

1. Just last week, the NRC implemented our new reactor oversight process on an industry-wide basis. The new program uses more objective, timely, and safety-significant criteria in assessing performance and represents one of the most fundamental changes in the agency's regulatory process in some years. Both the regulators and the industry have learned a lot about what most contributes to safe operations over the last quarter century and the new oversight effort takes advantage of those insights.

As I am sure you are aware, the NRC engages in extensive inspections of the universe of commercial nuclear reactors to ensure conformance with our regulatory requirements. Every reactor site has at least two resident inspectors -- NRC employees whose work station is physically at the reactor site. The new oversight process is designed to channel inspection effort to matters with the highest safety significance, while providing timely evaluation of plant performance. The process includes objective performance indicators, which will be fully reported to the public every three months, as well as a focused baseline inspection program.

The NRC last year conducted a six-month pilot of the process at nine sites, making adjustments and improvements as we went along. This is still a work in progress, and we expect to make additional

improvements on the basis of what we learn as the process is applied to more than 100 commercial nuclear reactors.

We decided to apply the new process nation-wide at this time with the encouragement both of the industry and of the Union of Concerned Scientists.

2. Another initiative relates to the Commission's accelerated license renewal program. A few years ago, many knowledgeable observers believed that the deregulation of the electric utility industry would cause so much financial pressure that a large percentage of operating nuclear plants would be forced to shut down prior to the end of their forty-year licenses.

Nonetheless, the NRC proceeded with the development of a process for the timely renewal of operating reactor licenses. Baltimore Gas and Electric's Calvert Cliffs plant was the "test site" for the program. On March 23, the Commission issued a renewed license for Calvert Cliffs, Units 1 and 2, ahead of schedule. As you may be aware, on Tuesday of this week, a three-judge panel of the U.S. Court of Appeals for the D.C. Circuit unanimously rejected a petition challenging the procedures we used in processing the Calvert Cliffs application.

Duke Power Company's Oconee site is the next license renewal application under review. The staff expects to complete its work on the Oconee application on a schedule that may well permit a Commission decision by July.

Both the NRC and the industry consider the license renewal process a success. We are aware of 17 announced applications for license renewal covering 25 units. Those who once predicted massive early shutdowns are now projecting that up to 85% of operating plants may ultimately apply for license extensions. This is an important initiative as, in appropriate cases, it will allow nuclear plants, which provide about 20% of the nation's electricity today, to continue to contribute significantly through the early decades of the 21st century.

3. Another far reaching initiative involves our effort to develop and implement a risk-informed approach to nuclear power plant regulation. The approach uses risk insights, together with other pertinent information, to establish requirements that better focus licensee and regulatory attention to design and operational issues commensurate with their importance to public health and safety. The program is intended to evaluate the technical bases that underpin NRC requirements and to modify them to focus on the most safety-significant issues.

Our draft rulemaking plan for this effort proposes an alternative regulatory framework that will enable our reactor licensees to use a risk-informed process to define the equipment that should be subject to special requirements for reliability. Other aspects of this initiative include changes to the regulations and regulatory guidance on decommissioning, fire protection, and reactor safeguards. More changes will doubtless follow. This is a multi-year effort to rethink many of the basic concepts underlying the regulatory system. The results of this effort may lead to some relaxation or elimination of some existing regulatory requirements, as well as to the imposition of some new requirements, as warranted.

Taken together, these three NRC initiatives demonstrate a regulatory program that is responding imaginatively and effectively to fundamental changes in the nuclear industry, that is dynamic and flexible in responding to change, that is a leader in developing new approaches to regulation, and that is accomplishing all of this while maintaining our paramount objective of protecting the public health and safety.

I will be pleased to respond to your questions.

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**The U.S. Nuclear Regulatory Commission,
"Then and Now"**

Remarks of

**Greta Joy Dicus, Commissioner
United States Nuclear Regulatory Commission**

at the

**Nuclear Energy Institute
Fuel Cycle Conference**

**April 3 - 7, 2000
Memphis, Tennessee**

Good morning everyone. It's a great pleasure for me to be here today and to have the opportunity to speak to you at the Nuclear Energy Institute's Fuel-Cycle 2000 conference. Let me begin by extending my appreciation to the Nuclear Energy Institute for hosting this very important conference, and to welcome all of you participating in this week's scheduled events. With the number of participants and representatives here today, it is clear that our national and international nuclear communities have a sincere collective interest in the direction the nuclear industry is heading and changes that will be

effecting that direction. As most of you are aware, over the last few years the nuclear industry, the public, and the Nuclear Regulatory Commission (NRC) have been working together to address common interests and concerns regarding the NRC's current regulatory system and oversight involvement, and ultimately, to mutually resolve these issues without compromising worker and public health and safety or environmental protection. From my perspective, I view this dialogue as necessary, constructive, and beneficial. When taking on any change one must remember, that the process must always begin with the end-in-mind. Maintaining the safety and health of our stakeholders and the public are that end. My topic of discussion, "**The U.S. Nuclear Regulatory Commission, Then and Now,**" provides a panoramic look of the nuclear industry and the NRC, as well as those successes, challenges, and turning points that have allowed for our current path-forward of business and process improvement and change. Specifically, I will address and summarize the following topics:

- Programmatic activities, roles, and responsibilities that currently exist within the NRC;
- Events that have prompted self-assessment and change;
- Changes that have taken place;
- The general nature of changes to come; and
- Related impacts to our stakeholders and the public.

Throughout the years, the establishment and implementation of a sound infrastructure to systematically and safely construct, operate, and manage our licensed facilities has been a common goal of both the nuclear industry and the NRC, and overall, we have recognized and shared many successes. While realizing these successes in our programs and efforts, we also have faced a number of short-comings from which we have gained a great deal of knowledge and experience. Experiencing those short-comings, identifying their root-cause, and implementing timely and effective corrective actions has facilitated the maturing of the nuclear industry and have brought us to where we are today. Additionally, advancements in technology and operations, coupled with the industry's continued awareness for improving process safety, personnel training, and management accountability, and most of all, being able to demonstrate safe, effective, and predictable operations, has afforded the NRC the opportunity to assess its existing regulatory and oversight structure and programs to gain better perspective of our own efficiencies and effectiveness. After 25 years of existence and in concert with the nuclear industry, the NRC is undertaking changes of its own and is continually in search of improving its business operations. Over the last few years, the nuclear industry and the public have raised several ideas of interest to the NRC, and have effectively gained the Commission's attention. Ideas that have made us re-think how the NRC currently conducts its business operations, as well as the effectiveness in communicating who we are and what we do. As a result, we have put forth and continue to refine a number of initiatives that will allow for a more risk-based, streamlined, and effective regulatory implementation and oversight process, which ultimately will improve the predictability and objectivity of our regulatory decisions. We actually consider many of these issues in the NRC Strategic Plan, which also includes performance goals and metrics, so that we can measure and evaluate our performance. Specifically, these goals include:

- Improving the effectiveness and efficiency of our business operations;
- Improving our communications with stakeholders and the public;
- Maintaining public confidence;
- Improving our consistency and predictability in interpreting and applying regulations;
- Making activities and decisions more effective, efficient, and realistic, and
- Decreasing unnecessary regulatory burden to our stakeholders, while maintaining safety, and providing adequate protection to our workers, our public, and our environment.

From rulemaking to standard review plan development, including licensing, inspection, and enforcement, the NRC's fuel-cycle, enrichment, reactor, spent-fuel, and waste management activities are being examined to further clarify our regulatory role and to streamline and improve the effectiveness and efficiency of our regulatory and oversight operations. In these same technical areas, the NRC continues its role with respect to external regulation of certain Department of Energy programs, such as high-level waste disposal, tank waste remediation, and mixed-oxide fuel-fabrication. Along these paths, we have also concentrated on establishing better lines of communication and more openly engaging and responding to both our stakeholders and the public. Regulatory formulation, decision making, and improving our objectivity and response time to submitted questions, comments, and petitions, are areas

where the NRC has become more open, efficient, and transparent. From the examples provided, you can see that the NRC is part of and not separate from this changing environment. However, and I strictly emphasize, our primary mission, to "**protect public health, safety, and the environment**" and to "**promote common defense and security**" has not and will not change.

Within our current operations, regulatory and oversight responsibilities for commercial nuclear power reactors, fuel-cycle and enrichment facilities, spent nuclear fuel, and high-level waste lies within the Headquarters Offices of Nuclear Reactor Regulation (NRR) and Nuclear Material Safety and Safeguards (NMSS), as well as four NRC regional offices. A general summary of those facilities and/or activities that the NRC is responsible for and/or programmatically involved with, include:

- 103 commercial nuclear power reactors;
- 1 Uranium conversion facility;
- 2 Uranium enrichment facilities;
- 7 Fuel-fabrication facilities;
- 31 Interim Spent-Fuel Storage Facilities operating or under development; as well as
- Pre-licensing consultation and NEPA analysis involving the Department of Energy's Yucca Mountain Repository.

Additionally, source material recovery operations, decontamination and decommissioning activities, low-level waste disposal, and other external regulation efforts also play a major part in the NRC's regulatory and oversight mission. My focus today addresses those areas where regulatory and oversight initiatives have been impacted the most and where significant changes have already taken or are in the process of taking place.

Although the basis of the NRC's system for licensing, regulating, and overseeing nuclear facility construction and process operations is prescriptive in nature, it has adequately demonstrated and proven its effectiveness in maintaining safe operations, and in protecting our workers, our public, and our environment. Over time as with most situations, experiences are realized, lessons are learned, and improvements are made, therefore, change becomes inevitable. Both the nuclear industry and the NRC are experiencing such changes and are working together toward resolution. As evidenced by our excellent and long-standing safety record, one cannot dispute the value and necessity of having an independent set of standards, codes, and regulations for an industry where consequences have been and can be devastating, and where the public is extremely skeptical. This is an area where I believe the NRC and the nuclear industry share a common appreciation for safety and health, and protection of the environment.

Over the last 25 years the nuclear industry has experienced technological advancements that have allowed for major advancements and improvements in many nuclear arenas. Along with these positive shifts, our industry has also gained many beneficial insights relating to worker, public, and environmental protection and safety. These advancements and progressions, specifically in areas such as nuclear safety and engineering, and coupled with a continued focus on improving worker safety awareness, has not taken place without recognition. Though certain events have challenged us, and the unknowns will continue to do so, one cannot dispute industry's continued success in improving its overall performance and in promulgating the importance and necessity of worker and public health and safety. This path of continuous improvement and demonstrated successes, along with the NRC's long-standing, effective, and continual involvement, has allowed for the NRC to confidently move forward in enhancing its regulatory development, licensing, inspection, and enforcement programs, while not compromising the health and safety of our workers, our public, and our environment. As brought to our attention, and through our own self-assessments, we are working toward refining and balancing our regulatory and oversight programs to be more risk and safety focused. The initial step in this direction surfaced as a result of the rupture of a UF₆ cylinder in 1986 at Sequoya Fuels and a near criticality accident in 1991 at the General Electric fuel-fabrication plant. Those two instances raised concerns about the control of non-radiological chemical hazards and licensee change control process. Based on these experiences, the NRC initiated a rulemaking to amend its requirements for fuel processing facilities in 10 CFR Part 70, "**Domestic Licensing of Special Nuclear Material.**" This amendment adopts a more risk-based approach to regulation. It also requires and emphasizes the

importance of development of an **Integrated Safety Analysis (ISA)**. The ISA concept truly addresses the risk and safety-based regulatory approach to rulemaking, licensing, inspection, and enforcement. Essentially, it is a very fundamental and logical approach to identifying, evaluating, and managing risk. The basic steps considered in the ISA approach include:

- The identification of potential process hazards;
- Consequence evaluation of credible accident scenarios and accident sequences; and
- The identification of safety systems and controls that are relied on for maintaining process safety.

Once the process hazards and the related safety systems and controls are identified, and the consequences are evaluated, one will then be able to gain an isolated sense of what it will take to adequately protect the worker, the public, and the environment. If properly carried-out, then safety can be managed commensurate with the associated risk.

Reflecting back to the 1986 Sequoya Fuels and 1991 General Electric incidents, and as a direct result of those incidents, the NRC took its initial step towards revising and improving its regulatory and oversight process. This move forward and its results to date, are the focus of my remaining discussion. The NRC has taken several streamlining steps to clarify and consolidate its efforts relating to risk-based regulation and oversight, minimizing jurisdictional and regulatory duplication, reducing stakeholder burden, and increasing public confidence in our system, process, and role as an independent regulator. The following provides a summary of those completed efforts and in-progress initiatives of what has taken place to date:

RULEMAKING AND LICENSING - What we've done and where we're headed

- The new 10 CFR Part 63 proposed rule, "**Disposal of High-Level Radioactive Wastes In a Geologic Repository at Yucca Mountain, Nevada,**" and the associated **Yucca Mountain Review Plan**, are due to the Commission in April 2000. In preparing our Agency and staff for a Yucca Mountain license application from DOE, should that occur, the completion of these two documents is most essential. 10 CFR Part 63 is a risk-based rule focusing on both pre-closure and post-closure repository operations and includes the ISA approach for the pre-closure performance period and the Total System Performance Assessment approach for the post-closure performance period. In-line with this approach, DOE is in the process of finalizing its Yucca Mountain Siting Guidelines. This is a very important step for DOE, because the siting guidelines include the evaluation criteria and methodologies to be used for making a site suitability determination. As part of our statutory responsibilities under the Nuclear Waste Policy Act, the NRC has reviewed and commented on the draft guidelines and the Commission will eventually have to concur on the final guidelines as well. DOE's siting process is specific to the site suitability determination, and will be based on site characterization and waste form sufficiency results. Additionally, and as a clarifying point, the siting process is separate from any potential licensing process that the NRC would conduct if an application were submitted. Some questions have been raised regarding NRC's involvement in the DOE Yucca Mountain effort, and I wanted to make clear the difference between NRC's pre-consultation and environmental review involvement versus the licensing process, which are separate and distinct. **MOVING ON to our Part 70 initiatives.**
- The amended 10 CFR Part 70, "**Domestic Licensing of Special Nuclear Materials,**" and related draft Standard Review Plan (SRP) are due to the Commission in May 2000. The rule and the SRP will include the ISA concept, as previously addressed, which allows for a risk and safety-based approach to licensing, regulation, and oversight of the NRC's 7 fuel-fabrication facilities. This approach also endorses the use of utilizing industry standards when possible and appropriate, which is also consistent with the policy of the NRC. You will find that the SRP is consistent in emphasizing that industry alternatives can be proposed. The SRP can be viewed as a safety-based template that provides a guided path in making one focus on what's important to safety, and how to

manage the associated risks. It provides the necessary flexibility and burden reduction for the fuel-fabrication industry, and encourages the industry to be pro-active in identifying different, but comparable approaches and solutions to establishing their licensing basis. As one can derive, the SRP is detail oriented from a safety-based standpoint, but not prescriptive. After several years of hard work and dedication by NEI, the industry, and the NRC, we are in the final leg of bringing the Part 70 rule and the SRP in-line with risk- and safety-based regulation. One of the final parts of this process will take place in the April-May time-frame, when the NRC will conduct its public meeting to address the revised SRP.

- Another highly visible effort is the area of reactor license renewal. I am pleased to tell you that the power reactor license renewal process is progressing well, extremely well by most measures. As you are aware, the NRC approved renewal of the Calvert Cliffs operating license on March 23, 2000, which is the very first U.S. reactor operating license renewal to take place. I might add, that the review and renewal process was completed approximately 2 months ahead of projected schedules. Additionally, the Oconee nuclear power plant operating license renewal application is scheduled for completion by August 2000. Perhaps sooner. We initially projected a 30 to 36 month schedule to complete license renewal reviews and I am optimistic that the staff, the industry, and the Commission will be able to further streamline the license renewal process. Perhaps the most important performance indicator that speaks to the initial success of the reactor license renewal program is the growing industry interest and queuing up, for license renewal. Utilities are lining up for staff resources to support license renewal for their facilities. Licensees for about 15 units, for example, have all indicated their plans to submit a license renewal application within the next 2 ½ years.
- Perhaps some of the most cross-cutting changes to date deals with our spent-fuel storage and transportation program. The rulemaking plan for revising 10 CFR Part 71, "**Packaging and Transportation of Radioactive Material**" is due to the Commission in May 2000. This effort will take-on reassessing the Generic Environmental Impact Statement (NUREG-0170), updating shipment parameters, cask designs, and dose models, and validating assumptions and modeling used in spent fuel risk analysis, which will give consideration to new cask designs, including dual-purpose casks. A summary report on stakeholder interests, and NRC staff and contractor reviews will be issued in June 2000, followed by additional public meetings in the summer time-frame. In-line with the 10 CFR Part 71 rulemaking effort, 10 CFR Part 72, "**Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste,**" is amending its Part 72.48, "**Changes, Tests, and Experiments**" change control process, to allow Certificate of Compliance holders to make design changes without prior approval of the NRC. Currently, only a licensee can make such changes. This burden reduction initiative will be implemented in April 2001. Technical specifications is another area where the industry has expressed a lot of interest, specifically with respect to the type of information that should be included in the TECH SPECS versus the safety analysis report. Lastly, we have been working very hard to better streamline our Certificate of Compliance (CoC) rulemaking and amendment process. NRC staff has made substantial improvements to shorten the rulemaking process and make it more efficient and effective. To streamline the internal rulemaking review process, the NRC has developed standard language that will be used for CoC rulemakings that add new cask systems to our General License listing. This has allowed staff to reduce time for internal NRC concurrence from 3 weeks to 1 week. We have also developed standard language for CoC amendments that will similarly reduce the review time for the amendment process.

THE OVERSIGHT PROCESS - What we've done and where we're headed Nuclear Power Reactors

Over the next year, perhaps the most visible change that will take place is with the way the NRC oversees safety at power reactor facilities.

The new Reactor Oversight Program was recently piloted at nine reactor sites - at least two in each of NRC's four regions. The new program, offers sweeping changes to our inspection, assessment, and

enforcement processes.

The success of the new reactor oversight process is important. The Commission believes that these broad-scale changes will allow the NRC staff to draw conclusions about licensee safety performance that are objective, predictable, defensible, and more easily communicated to all our stakeholders. We also envision the process will stimulate more timely NRC and licensee responses when there is declining safety performance. As an added benefit, this new approach will permit licensees and the NRC to focus resources on those aspects of the plant that have the greatest impact on safety. I also believe that having technically sound performance indicator data available to the public will help to increase public trust and build public confidence in what we are doing and further clarify our regulatory role - in other words, making our decisions and the basis for them **TRANSPARENT**.

Both the industry and the NRC staff learned through this pilot process. Issues such as timely and accurate reporting of performance indicators, content of inspection reports - for example, whether to include positive inspection findings, readiness of the NRC staff and industry for wide-scale implementation of the revised process, and a strategy for revising the performance indicators, such as in the security area, are important issues that will be considered and appropriately resolved.

Changes will be implemented incrementally through a deliberate process that will include extensive stakeholder involvement. A staff proposal to implement the revised process for all 103 operating reactors in April 2000 is currently under consideration by the Commission.

Fuel-Cycle and Enrichment Facilities

The NRC's fuel-cycle and enrichment inspection and oversight process is on a course similar to that being piloted for nuclear power reactors, however, it's currently in the developmental phase of the process. Recognizing that industry has not shared the same amount of interest and concern regarding these facilities, and that the hazards and risks are somewhat different, the potential chemical and radiological consequences that can result from process related events, can be severe. As with the reactor oversight process, the fuel-cycle effort is also focusing on performance indicator data that bounds those structures, systems, and components that are safety significant, and information addressing factors that challenge those controls. As you are aware, several meetings have taken place over the last few months with NEI, the industry, and the public, and more of these meetings will be conducted as well. The current path forward provides for a "Pilot Phase" implementation around the 2001 time-frame and to date, approximately three facilities have expressed preliminary interest in participating in the "Pilot Phase" process.

CLOSING REMARKS

As you can see, the NRC is most definitely pro-active in addressing regulatory reform from the safety and risk-based standpoint.

Throughout these regulatory efforts, the NRC has included our stakeholders and the public and has made publically available, related rulemaking, licensing, and inspection information. The objective of this important step is not to try and please every individual, but to demonstrate that the NRC conducts its business operations in a fair, objective and independent manner, while ensuring adequate protection of public health and safety, and the environment. This approach helps to build public trust, gain public confidence, and demonstrates that the regulatory process is being carried-out in a transparent manner. Establishing and implementing formal public participation mechanisms, such as public meetings and workshops, addressing and reconciling public concerns in a fair manner and with an open mind, using plain language and terminology that is generally understood or recognized, not only helps to establish public trust and confidence, but to maintain it as well. Clearly communicating our thoughts and processes to our stakeholders and the public, involving them through formal participation mechanisms, and demonstrating a general effort to be open to constructive criticism, are

elements that are essential to effective and successful regulation and program implementation. These

interactions provide early signals regarding dominant interests and concerns of those individuals and communities that will be directly or indirectly impacted by the action. By remaining receptive and responsive to those signals, the NRC continues to improve its credibility as an open minded objective regulator, while at the same time, ensuring a realistic, predictable, and stable regulatory framework, that is protective of the worker, the public, and the environment.

As I hope my presentation has made clear, in today's environment, both the regulator and the nuclear industry must be open to change, must maintain a sound, realistic, and predictable technical basis for its regulation and licensing basis, and must be able to ensure that these requirements are understood and are reasonably acceptable to the public, whose safety is our first priority. I hope that the insights and examples I've shared with you today provides a clear picture that the NRC is amenable to change and that we have demonstrated our openness to such change, without compromising the health, safety, and protection of our workers, our public, and our environment. Thank you.

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THE "VERSUS"; THE "AND" a talk by Commissioner Nils J. Diaz

Regulatory Information Conference
Washington, D.C.
March 28, 2000

It would be an understatement to say that the NRC and the entire nuclear industry have experienced change since my first RIC in 1997. I remember that the buzz words preoccupying everyone at the time were...

Compliance vs. Safety.

Lots of entertaining stories on these two complementary words, lots of spilled guts and blood over them. I have to admit that I probably raised a few eyebrows at that 1997 RIC when I congratulated the industry for its performance - it was the Millstone time. It would suffice to say that this Commission, the industry and stakeholders set the crooked path straight and now we have...

SAFETY and Compliance.

When the dust was settled, the people of the U.S. had won. Something close to a revolution has taken place, and most of it is focused, as it should be, on SAFETY. Safety is a word that creates excitement, fear and devotion; it is part of everyday life in this great country. Watch the frequent news coverage. The safety of this and that; and even when safety is unqualified, it strikes a chord. Is there any more important and pervasive safety issue than automobile safety? Airplane safety? Anyone for air bags in airplanes? Is that another story?

Safety is really the NRC's only business. The transformation that has taken place is to achieve real safety

and, until better terms are found, to place the not important to safety in its proper place, including no longer issuing notices of violation for trivial findings. Some would think that the transformation involves only risk-informed regulation. I believe this transformation is broader and fundamental to the mission of the NRC: focus attention and resources on what is more important to safety. Demand safety in uncompromising ways, let industry manage it, and have an objective accountability system. I should point out that risk-informed regulation not only should be used as a decision-making tool, but also has a public information role: it should serve to communicate and clarify the safety relevance of events and regulatory decisions in terms of public health and safety. Here, the end is clearly a lot more important than the means.

I am proud to serve this country and this agency, within the framework of the collegiality of the Commission, during a period of change and major achievement, when safety is placed first and foremost, in a manner consistent with the law, and with the principles of fairness and equity essential to a democratic society.

And given that safety is our business, if we were equipped with a "safety meter" and an acceptable safety range, life would be sweet. But we are not, and therefore, decisions have been and are being made that conservatively comply with the overarching goal of achieving...

Adequate Protection of Public Health and Safety.

This overriding consideration is paired with the mandate to...

License and Regulate

activities and materials, as specified by the Atomic Energy Act.

Day in and day out, in fulfilling its role the NRC tries to develop ways to define, infer and verify safety. The licensees interpret our rules and regulations, infer safety from their exercise of licensed activities, and verify consistency between their experience and our regulation. The NRC's and licensees' activities are conducted within the broad context of protection of public health and safety but bounded by the more manageable goal of...

Assurance of Adequate Protection of Public Health and Safety.

Obviously, the "safety meter" needs to be a digital multimeter. Adequate protection, here or elsewhere, should be established in no uncertain terms by the representatives of the people. It is our job to then bound it by rules assuring adequate protection with a strong correlation to our licensing and regulatory activities, and to licensees' management of their facilities.

For all practical purposes, the acceptable range for assurance has included safety margins, "just to be safe".

Assurance should not be "mushy". It should have a backbone, it should be conservative, but not unduly restrictive, it should be readable and communicable. I believe assurance is amenable to statistical treatment while continuing to be appropriately subjected to deterministic measures. Technology and regulation are not stagnant; they should improve with time. Therefore, assurance should be based on increasingly quantifiable evidence of the safety status. The safety status has no definitive quantitative threshold that would trigger regulatory action. Assurance should be unshaken by events and stand up to public scrutiny. It should be enforceable. It should be a vehicle for progress, not an impediment to betterment. And it should be balanced, and provide...

Reasonable Assurance of Adequate Protection of Public Health and Safety.

"Reasonable" prevents the skewing of assurance; it is a driver for the achievable and is a deterrent to extremism in either direction. "Reasonable" brings practice, experience and expert judgment to more

clearly bound the assurance of adequate protection.

The call is strong out there to codify what is adequate protection. Like I said, that task belongs to the representatives of the people. We have been handling the "assurance" and the "reasonable assurance" well and striving for better without hindering the good. More definition is being provided every day and I believe quantification is increasing. It is true that no one can invoke an "adequate protection" number; in fact, probably never will. The performance and reliability of plant systems, structures, components, and personnel are subject to stochastic fluctuations, indeed to random variations. And so is the marketplace. However, the licensees and the NRC can and should control the quality of all technical processes, both deterministic and probabilistic.

Yet I know we have most of the pieces of the puzzle. The best news is that you are going to find the answer as a natural product of the on-going transformation, probably driven by today's pressing question:

Safety vs. Cost Competitiveness.

We already learned that the versus did not help safety before. The real issue, since I believe they are both realities, is then...

Safety and Cost Competitiveness.

This is an old issue made new by today's environment of de-regulation, of consolidation, increasing productivity and cost cutting. Which U.S. industry sector was I talking about? Is there any industry to which this does not apply?

Can the nuclear industry make it work across the board? Surely, the mere mention of cost competitiveness raises the safety awareness of the NRC. Does it equally raise the safety awareness of the entire industry? Has the indispensability of safety worked its way to every corner affecting safety?

I believe the top nuclear industry performers are providing clear evidence that real safety as a priority is not only compatible with cost competitiveness, but is a good driver for it. If this compatibility is strengthened, it might even be possible to find cost competitiveness driving safety in specific areas. Clearly, there should be no trade-off of real safety. There are many pathways for cost competitiveness yet they should all have one final filter: safety. The challenge is to optimize the positive feedback between safety and cost competitiveness.

There is much work yet to be done for the NRC, for the industry and stakeholders to arrive at a satisfactory mapping of assurance of adequate protection. Mapping, as in a composition reflecting areas, boundaries, limits, values. Mapping as in blobs.

Want more? Tune in next year.

I would be remiss if I do not tackle one of my favorite subjects and its relationship to reasonable assurance of adequate protection.

The Big "Zero Factor"

Last year I talked about the zero factor in 50.59 and mentioned that its Medusa-type head shows in many places, especially when risks are mentioned!

I believe there is a Zero Factor that needs to be discussed, eliminated and subsumed into reasonable assurance.

The "Zero" Radioactive Risk

The "Zero" Radioactive Release

The "Zero" Radioactive Dose

The influence of the "zero factor" needs to be addressed when discharging the NRC's radiological protection mission. After all, this is NRC's most important function, where everything starts and ends.

Let me talk about the NRC and zero risk. It is clear that the courts, interpreting the law, have ruled "the level of adequate protection, need not, and almost certainly will not, be the level of 'zero risk'"

Furthermore, "the courts have long accepted the Commission's definition of its statutory mandate to 'provide adequate protection of public health and safety' as requiring not a risk-free environment, but a 'reasonable assurance'..."

Risk as in radioactive risk. Radiation is radiation yet radioactive risks are often treated quite differently depending on the source. The risks from radiation need to be scrutinized and given equal treatment under the law. If different treatment of the same radiation risk were of benefit to this country, I would be its strongest advocate. But it is not beneficial and I disapprove of the arbitrary imposition of a zero factor to narrowly selected radiological risks with no importance to public health and safety. I oppose it not only because it is contrary to the law governing the NRC, but because it hampers debate and gets in the way of good regulation.

In 1997, three conferences ago, I congratulated the nuclear industry for the safety record of this decade, a safety performance that keeps improving.

Today, I want to congratulate the industry again for its safety record and for industry and stakeholder's contribution to better regulation. I also want to congratulate the staff for heeding the call for change, going beyond the call for duty and forging good regulation. Everyone here is contributing to the quality of life of the American people.

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UNITED STATES NUCLEAR REGULATORY COMMISSION

OFFICE OF PUBLIC AFFAIRS

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No. S-00-13

April 20, 2000

[[PDF Version \(61 KB\)](#) | [Slide Presentation](#)]

OLD QUESTIONS; NEW ANSWERS

**Commissioner Nils J. Diaz
United States Nuclear Regulatory Commission**

**Remarks Before ICONE-8
Baltimore, Maryland
April 3, 2000**

Good Morning, Ladies and Gentlemen. I'm pleased to have this opportunity to discuss a regulator's view of the road ahead for nuclear technology as we enter its second century. The accelerating pace of "technologization" and "informatization", and the expansion of market economies throughout the world continue to create opportunities and challenges for all areas of endeavor, including the generation and regulation of nuclear powered energy. Change is here, and everywhere; change is here to stay.

Although I am speaking to you as a member of the Nuclear Regulatory Commission, I will be offering my individual views today.

[Figure 2]

Economic deregulation is a reality in the United States electricity markets and in many places abroad. Sixteen of the 31 states in the United States of America with operating nuclear power plants have already deregulated their electricity supply. It is not the only changing economic factor. In the U.S., sustained performance improvements at nuclear power plants, license renewal, sales of existing plants, and mergers are making headlines. Ten days ago, I had the privilege of participating in a ceremony marking the first 20-year license renewal for a U.S. nuclear power plant, the Calvert Cliffs units, an issue of interest to the General Chairman of this conference, Mr. Poindexter. Good changes are in the air, and yes, there are regulatory changes. The question, therefore, is not whether to change or not to change, but how to make change serve the best interest of each country, in a manner compatible with the worldwide market place.

And, talking about change, let's look back 3 years. In a Wall Street Journal article of June 18, 1997, two old questions facing nuclear power plants were raised in the context of forced early shutdowns: their

safety and the cost competitiveness of nuclear power plants. Those were the times of Millstone and design-bases compliance, and of the doomsday predictions of the effects of de-regulation and stranded costs. Two dozen early shutdowns of plants with "marginal safety" and/or cost were forecast by many; up to 50% of the fleet by some. The Wall Street Journal article stated: "more conservatively,

NRC Commissioner Nils Diaz estimates only one dozen early shutdowns." There have been 6, and I am not counting.

In another Wall Street Journal article, this one on October 28, 1999, a different perspective is presented. The article attempts to describe the present merger-buyout financial picture, as other significant changes take place. In this article, the decommissioning gloom of 1997 is replaced by the license renewal boom, and the compliance orientation has been replaced by safety-focused regulation. Most stranded costs are not stranded anymore. More recently, a New York Times article on March 29, 2000, discussed the sale of two New York Power Authority nuclear plants to Entergy for \$967 million; "it may have been the ultimate sign of the resuscitation of an industry once thought to be too costly and unsafe to continue operating..."

[Figure 3]

Independent of financial considerations, the U.S. Nuclear Regulatory Commission has been changing its regulatory regime, improving predictability and accountability for all stakeholders. It would be an understatement to say that the NRC and the entire nuclear industry have experienced change since 1997 when the buzz words preoccupying everyone at the time were...

[Figure 4]

Compliance vs. Safety.

At that time, "Compliance" and "Safety" were often considered equal. Regulation was event-driven, and based on a set of mostly old and rigid rules and processes. Today, I am happy to report that the U.S. NRC has been developing a regulatory regime with a better focus on safety. It would suffice to say that this Commission, the industry and stakeholders set the crooked path straight and now we have...

[Figure 5]

SAFETY and compliance.

When the dust settled, the people of the U.S. had won. Something close to a revolution is taking place, and most of it is focused, as it should be, on SAFETY. Safety is a word that creates excitement, fear and devotion; it is part of everyday life in this great country. Watch the frequent news coverage. The safety of this and that; and even when safety is unqualified, it strikes a chord. Is there any more important safety issue than automobile safety? Airplane safety? Anyone for air bags in airplanes? Is that another story?

Safety is really the NRC's only business. The transformation that has taken place is to achieve real safety and, until better terms are found, to place the "not important to safety" in its proper place, including no longer issuing notices of violation for trivial findings. Some would think that the transformation involves only risk-informed regulation. I believe this transformation is broader and fundamental to the mission of the NRC: focus attention and resources on what is more important to safety. Three years ago, I called it safety-focused regulation. Demand safety in uncompromising ways, let industry manage it, and have an objective accountability system. I should point out that risk-informed regulation is not only a decision-making tool, but it also has a public information role. It should serve to communicate and clarify the safety relevance of events and regulatory decisions in terms of public health and safety.

Safety brings us back to the very old questions: Is it safe? Is it economical? But in today's competitive marketplace, these two questions are now joined in a dilemma; or is it an opportunity?

[Figure 6]

Safety vs Cost Competitiveness

I submit that two independent yet related variables -- safety and cost competitiveness -- determine the viability, indeed the survivability, of nuclear power and nuclear technologies. They are both integral quantities and embody most of the determinant issues. Safety and cost competitiveness [Figure 7] are both dynamic variables and easily tailored for use in decision-making. They have been, and could be, at odds with each other, but should not be. In the nuclear industry of today, can you have one without the other? In fact, it is imperative that they work together and not against each other.

I suggest that in the United States of America, the marketplace and regulatory reform are coupling nuclear safety and cost in the right manner. In the nuclear industry, safety is the priority that enables cost competitiveness while cost decisions must consider their effects on safety. This coupling is obvious when looking at averaged safety and cost performance indicators, and it is dramatic for "top performers." I believe there is strong supportive evidence for the statement that multiple issues of safety importance became clearer to licensees when cost competitiveness became important. A look at the last ten years of productivity improvements and safety improvements makes the case.

[Figure 8]

There is no doubt that the safest nuclear power plants in this country are generating electricity at very competitive production costs, often lower than coal. The U.S. NRC has matured into a more safety-focused regulator, and the industry is now able to focus more sharply on real safety, licensing and regulatory requirements. It was the industry that first enabled the NRC's shift to real safety by lowering the number and significance of events and improving overall performance. It is the industry that must keep it so.

[Figure 9]

Safety and cost are also determinants of the credibility of the industry, a factor that cannot be overstated. Safety and cost should work in a synergistic relationship since for the industry, having credible benefits to society, including both safety and cost, is a must. And, for regulators, having credible processes to ensure adequate protection of public health and safety and the environment is fundamental.

The old question deserves a new answer in today's challenging economic, technological, and energetic environment, and the answer is real:

[Figure 11]

Safety and Cost Competitiveness

Both safety and cost competitiveness are realities and must be addressed with the same open approach that has brought about the effected and about to be effected regulatory improvements. Deregulation, consolidation, increasing productivity and cost cutting are here. Which U.S. industry sector was I talking about? Is there any industry to which this does not apply?

The mere mention of cost competitiveness raises the safety awareness of the NRC and the concerns of stakeholders. Does it equally raise the safety awareness of the entire industry? Can the nuclear industry make safety and cost competitiveness work across the board without infringing on the attained safety performance? Has the indispensability of safety worked its way to every corner affecting safety? It should.

I offer three recent examples of safety-focused regulatory improvements, done openly and with participation of stakeholders and industry. One is the new reactor oversight process, with a balanced

array of performance indicators, baseline inspections, girdled by a strengthened Corrective Action

Program. Another one is the new 10 CFR 50.59 change process where the word "minimal" entered the regulatory vocabulary, replacing the de-facto "zero" criterion. The third one is the risk-informed assessment component of the Maintenance Rule.

I believe the top nuclear industry performers are providing clear evidence that real safety as a priority is not only compatible with cost competitiveness, but is a good driver for it. If this compatibility is strengthened, it might even be possible to find cost competitiveness driving safety in specific areas. Clearly, there should be no tradeoff of safety. There are many pathways for cost competitiveness yet they should all have one final filter: safety. The challenge is to optimize the positive feedback between safety and cost competitiveness.

A better regulatory system would be an enabling factor for a safer and more economical nuclear industry. In this regard, I maintain that it is as important for the regulator to be cognizant of the industry as it is for the industry to be cognizant of the regulations and their implementation.

[Figure 10]

Furthermore, a reality check reveals that there can be no credible regulator without a credible industry, nor can there be a credible industry without a credible regulator.

I would be remiss if I do not tackle one of my favorite subjects and its relationship to reasonable assurance of adequate protection.

[Figure 12]

The Big "Zero Factor"

Last year, when talking about the zero factor in 10 CFR 50.59, I used a mathematical emphasis to illustrate how to get to zero:

[Figure 13]

$$0 = 10^{-\infty}$$

Zero shows its Medusa-type head in many places, especially when risks are mentioned!

I believe there is a "Zero Factor" that needs to be discussed and subsumed into reasonable assurance in the near future:

[Figure 14]

The "Zero" Radioactive Risk
The "Zero" Radioactive Release
The "Zero" Radioactive Dose

The influence of the "zero factor", often underestimated, needs to be addressed when discharging the radiological protection mission. After all, this is the regulator's most important function, where everything starts and ends.

Let me talk about the U.S. NRC and zero risk. It is clear that the U.S. courts, interpreting the law, have ruled

[Figure 15]

"the level of adequate protection, need not, and almost certainly will not, be the level of 'zero risk'"

Furthermore,

"the courts have long accepted the Commission's definition of its statutory mandate to 'provide adequate protection of public health and safety' as requiring not a risk-free environment, but a 'reasonable assurance'..."

Risk as in radioactive risk. Radiation is radiation yet radioactive risks are often treated quite differently depending on the source. The risks from radiation need to be scrutinized and given equal treatment under the law. If different treatment of the same radiation risk were of benefit to this country, I would be its strongest advocate. But it is not beneficial and I disapprove of the arbitrary imposition of a zero factor to narrowly selected radiological risks with no importance to public health and safety. I oppose it not only because it is contrary to the law governing the NRC, but because it hampers debate and gets in the way of good regulation.

From the start of the atomic age, the premise for developing peaceful uses of radiation and nuclear energy has been that these uses would benefit the general public in medical applications, food preservation, industrial utilization and electricity generation. The fundamental public health and safety objective for nuclear technology applications has always been, and will remain, that these uses would not pose unacceptable risks to public health and safety. National interests demand that the imposition of public health and safety regulations further the uses of nuclear technologies so that citizens can receive their benefits without compromising health or safety. The convergence of these two fundamental objectives requires embracing the regulatory and operational effectiveness changes. It also requires the application of complex, yet familiar, state-of-the-art technologies, as well as consideration of socio-political issues.

In summary, I am pleased to report that, in the United States, the changes made by the regulators and the industry are making a difference. The real and perceived status of nuclear power plants, from safety, economic, and financial considerations, has improved, and confidence is building in their predictability and reliability. Plant licenses are being renewed, large investments are being made, and financial transactions are multiplying. It is believed that as many as 85% of the current fleet of plants will initiate the license renewal process in the next decade. The benefits of predictable electricity production and low production costs are being felt and factored into corporate America's planning and government strategies. Competition is no longer death -- it might even be new life. I categorically state that nuclear safety has been and is improving. The national interest is being served.

There will always be the question of how far can the industry go in increasing productivity and cost competitiveness. From a regulator's viewpoint, there is only one answer: as far as real safety allows it. At that point, a more complex and demanding issue surfaces: how to establish the boundaries of reasonable assurance of adequate protection of public health and safety through the effective utilization of experience in an open, credible and reliable manner.

It is my privilege to serve my country and to participate with you in creating pathways for progress. Thank you.

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No. 00-059

April 5, 2000

NRC Issues Plant Performance Reviews For 90 Nuclear Power Plants

The U.S. Nuclear Regulatory Commission has completed its Plant Performance Reviews (PPRs) for 90 nuclear power plants and is making them available on the NRC web site. Thirteen nuclear plants, which participated in a pilot test of the agency's revised reactor oversight process, received their performance assessments late last year.

PPRs are an interim measure the NRC has used to assess nuclear power plant safety, after suspending the Systematic Assessment of Licensee Performance (SALP) in 1998 while it developed a revised reactor oversight process. PPRs consist of an in-depth, integrated assessment of overall plant performance. The primary purpose of these reviews is to evaluate safety performance information and identify any changes in plant performance so NRC can allocate inspection resources appropriately. The text of each PPR letter is available from the NRC Office of Public Affairs and has been posted at: <http://www.nrc.gov/OPA/ppr> on the NRC web site.

An important element of the previous SALP process was the public meeting the NRC conducted with the licensee to discuss the assessment results. During the interim process, the NRC has continued its practice of meeting publicly with licensees to discuss its performance assessments. Most plants have had recent public meetings and therefore few meetings are scheduled for these PPRs. Any meeting will be announced separately.

These PPRs mark the last assessments before initial implementation begins this month of the revised reactor oversight process. The Commission recently approved its use for the remaining operating commercial nuclear power plants (except for the D.C. Cook plant, due to an extended shutdown).

Under the new program, the NRC will conduct quarterly reviews of performance indicators and inspection findings and issue semi-annual assessments and updates to each plant's inspection plans. A full description of the revised reactor oversight process is available at: <http://www.nrc.gov/OPA/primer.htm> or <http://www.nrc.gov/NRR/OVERSIGHT/index.html> on the NRC web site.

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No. 00-063

April 11, 2000

NRC Revises its Enforcement Policy to Address the Revised Reactor Oversight Process

The Nuclear Regulatory Commission is revising the agency's enforcement policy to support the initial implementation of its revised reactor oversight process for all 103 commercial nuclear power plants.

It is the fourth major revision of NRC's enforcement policy since 1995, continuing the agency's efforts to use enforcement as a means of focusing licensee attention on identifying and correcting plant problems that are the most safety significant.

The agency published its interim enforcement policy last August as part of the six-month pilot plant study at 13 reactors at nine sites. The policy was developed as an integral part of the reactor oversight process and is intended to provide a unified agency approach for determining and responding to plant performance issues that: maintains a focus on safety and compliance; demonstrates more consistency with predictable results; increases effectiveness and efficiency; is easily understandable; and decreases unnecessary regulatory burden.

Based on the successful implementation of the pilot plant study, this policy revision incorporates the interim policy into the permanent one and makes it applicable to all currently operating commercial nuclear power plants. As described in the interim policy, the new assessment process uses a risk-informed method to evaluate the significance of inspection findings. If violations are involved, they are documented and may or may not be cited in a Notice of Violation, depending on the significance of the inspection finding.

If inspection findings cannot be evaluated by this method, an enforcement approach would be used where violations are assigned severity levels and are subject to civil penalties. Examples where this approach would be used include: willful violations; discrimination against workers for raising safety issues; actions that may adversely affect the NRC's ability to monitor utility activities, including failure to provide the NRC complete and accurate information; and incidents that involve actual consequences such as radiation over-exposures above NRC limits.

In developing this policy revision, the NRC considered the comments of various internal and external stakeholders submitted in response to SECY-99-007, "Recommendations for Reactor Oversight," the announcement of the interim enforcement policy last August, last July's *Federal Register* notice that requested public comment on the pilot program for the new regulatory oversight program, and information provided during numerous meetings with representatives of the nuclear industry and public interest groups as part of the revised reactor oversight process pilot program.

The new oversight process relies on the submittal of performance data in conjunction with NRC inspections to measure nuclear plant performance. Because the submission and review of such data is a new process, this policy revision includes a provision under which the NRC will refrain from taking enforcement action for non-willful failures to provide complete and accurate performance indicator data until January 31, 2001.

The revised policy will become effective upon publication in an upcoming edition of the *Federal Register*. Comments will be accepted 30 days after publication and will be considered prior to the next revision to the policy. Pertinent documents on this matter will be available shortly on NRC's web site and in the Agencywide Documents Access and Management System (ADAMS).

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April 4, 2000

MEMORANDUM TO: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield

FROM: Dennis K. Rathbun, Director
Office of Congressional Affairs

SUBJECT: NEI TESTIMONY AT SENATE ENERGY AND NATURAL
RESOURCES HEARING

On March 30, 2000, Joe F. Colvin testified before the Senate Energy and Natural Resources Committee. The purpose of the hearing was to receive testimony on S. 882, Energy and Climate Policy Act of 1999 and S. 1776, Climate Change Energy Policy Response Act. Mr. Colvin's testimony and the witness list are attached.

Attachment:
As Stated

cc: EDO
OGC/Cyr
OGC
SECY
CFO
CIO
OPA
OIP
OIG
ACRS/ACNW
OCAA

Contact: Linda Portner, 415-1673

**Testimony of Joe F. Colvin
President and Chief Executive Officer
Nuclear Energy Institute**

United States Senate Energy and Natural Resources Committee

**Washington, DC
March 30, 2000**

On behalf of the Nuclear Energy Institute (NEI), I would like to thank you, Chairman Murkowski, Ranking Member Bingaman and the members of this Committee for inviting NEI to testify on the value of the more than 100 nuclear power plants that provide our nation with vital energy security and environmental protection benefits.

The Nuclear Energy Institute (NEI) coordinates public policy for the U.S. nuclear energy industry. We represent 270 members with a broad spectrum of interests. In addition to representing every U.S. utility that operates a nuclear power plant, NEI's membership includes nuclear fuel cycle companies, suppliers, engineering and consulting firms, national research laboratories, manufacturers of radiopharmaceuticals, universities, labor unions and law firms.

The bills under discussion today -- S. 882, the Energy and Climate Policy Act of 1999 and S. 1776, the Climate Change Energy Policy Response Act -- reinforce two unassailable precepts to effective management of potential climate change: first, addressing greenhouse gas emissions demands informed, science-based energy policymaking; and second, solutions will require long-term, cost-effective technologies deployed on a global basis. On both counts, nuclear energy will continue to play a successful and prominent role.

THE LESSONS OF HISTORY

As Shakespeare has told us, "Past is Prologue." As early as the 1960s, nuclear energy's ability to avoid emissions that pollute the air was well understood. When energy security and environmental policies converged in the 1970s, increased use of nuclear energy became an integral element in energy policy decisions designed not only to achieve energy security and economic benefits, but to protect air quality as well.

At the time of the first oil embargo in 1973, approximately 20 percent of United States electricity supply came from oil-fired power plants. In some parts of the nation -- the Northeast, for example -- the percentage of oil-fired electric generation was considerably higher. Serious as it was, however, the 1973 embargo was only the first of two massive shocks to America's energy industry during the 1970s. The second came during the unusually cold winter of 1976-77. Acute shortages of natural gas and the legacy of federal price controls on interstate gas transmission forced widespread shutdowns of schools and factories for weeks throughout the Midwest. Obtaining natural gas for power generation -- at the time, the source of 18 percent of U.S. electricity supply -- was impossible.

The years proceeding the embargo era also saw the development of ambitious regulatory efforts to improve the nation's air quality. Concern over the environment compelled energy choices that protected our air quality while meeting increasing demands for electricity and

economic growth. To achieve both these potentially divergent goals, the nation turned to nuclear energy.

The Clean Air Act is the principal federal statute addressing air quality and man-made emissions by setting concentration levels for various pollutants allowable in the ambient air. Regulations then prescribe various limitations on emissions required to meet these standards. Pollutants controlled by the Clean Air Act include sulfur dioxide (SO₂), ozone (and its precursor nitrogen oxide, or NO_x) and particulate matter (PM). Much of the burden for reducing concentrations of these pollutants has been focused on the electric utility industry because of the ease and cost effectiveness of controlling large, stationary sources compared to smaller, mobile sources. However, reducing emissions was not the only method employed to achieve compliance with increasingly stringent Clean Air Act limitations. Avoiding the emissions in the first place while increasing electricity output was also critical.

Although some view air pollution compliance regimes as affecting only emitting sources, they are actually being enforced against the total electric supply system. Emission caps and permits under ambient air quality standards represent a finite level of pollution permitted for a range of industrial activities, including electricity production. These restrictions remain static even if the total amount of electricity needed to satisfy demand in a specific region increases. States or regions utilizing emission-free electricity sources, find it easier to simultaneously meet both government imposed emissions limitations and growing consumer demand for energy. The increased use of nuclear energy beginning in the late 1960's and early 1970's provided this additional compliance tool.

When comprehensive Clean Air Act limits were first implemented in the early 1970s, overall generation from emission-free sources was about 18 percent of the total electricity produced, most of it coming from hydroelectricity. In 1973, just five percent of the U.S. electricity supply came from nuclear power plants. In the subsequent decades, 89 new nuclear reactors began operating, more than tripling the amount of electricity Americans receive from nuclear energy. Today, 103 nuclear reactors supply approximately 20 percent of annual U.S. electricity, provide a hedge against volatile fuel prices and other supply disruptions and are the primary source of electricity in many of the states that produce or use nuclear power. In total, non-emitting generation (nuclear and hydroelectric) comprises 31 percent of total domestic electricity production.

Nuclear energy's cumulative avoidance of emissions since the 1973 oil embargo is enormous, as illustrated by statistics on only two pollutants. Between 1973 and 1998, the use of nuclear energy avoided the emission of 87.2 million tons of SO₂ and more than 40 million tons of nitrogen oxides (NO_x) at the same time it helped states satisfy increasing demand for electricity. In 1998, SO₂ emissions would have been 5.1 million tons higher; emissions of NO_x 2.4 million tons higher had fossil generation been used instead of nuclear energy.

When the United States responded to the oil and gas shocks of the 1970s by re-balancing its energy supply portfolio, it reduced dependence on oil-fired power plants (from approximately 20 percent of supply in 1973 to just three percent today) and increased reliance on coal and nuclear energy. Nuclear power plants also became a major compliance element for Clean Air Act requirements in states where they operate. Attainment designations permit programs, and other compliance actions under State Implementation Plans, implicitly rely on the continued availability of existing non-emitting electricity. Nuclear energy, by avoiding additional emissions as electricity output grew, acted as a silent -- yet vital -- partner in Clean Air Act compliance.

THE GREENHOUSE GAS CHALLENGE AND NUCLEAR ENERGY

Lessons learned about the role of avoidance technologies in meeting Clean Air Act requirements during the last 20 years are prologue to the long-term, technology based solutions that will also be needed to address man-made greenhouse gases like carbon dioxide or methane. But unique factors affecting the control of these gases make avoidance technologies ever more critical -- carbon is the energy source in the fuel, not a byproduct material that can be eliminated through end-of-pipe controls or low content fuels. So unlike conventional pollution control programs, avoidance and sequestration technology rather than emission control programs will be the primary methods of addressing carbon. S. 882 and S. 1776 are the first major legislative initiatives in the climate change debate to recognize this significant fact and promote responsive policy measures.

As with pollutants controlled under the Clean Air Act, climate change policies generally focus on sources that emit greenhouse gases or on technologies that reduce them. When the 1990 greenhouse gas emission baseline was calculated for the United States, 20 percent of the electricity was being supplied by nuclear plants, avoiding the release of over 141 million metric tons of emissions had carbon-based fuels been used instead. Today, U.S. nuclear plants avoid a total of 165 million metric tons of carbon annually; cumulatively, nuclear energy has avoided more than two billion metric tons of U.S. carbon emissions since 1973. From a compliance perspective, this contribution is essential. Based on current emission levels, the United States would be required to reduce greenhouse gas emissions by 162 million tons to achieve its original voluntary commitment to reach the 1990 baseline under the United Nations Framework Convention on Climate Change (UNFCCC). Without the avoided tons from nuclear energy, that commitment requirement would double to over 325 million tons.

The existing treaty commitment prompted the Clinton administration to call for voluntary commitments by industry to reduce carbon emissions. In response, various industries, including electricity providers, have undertaken to voluntarily mitigate their greenhouse gas emissions in partnership with the Department of Energy. In 1998, nuclear power plants provided almost one-half of the voluntary carbon reductions (the largest component) achieved by U.S. industry under the voluntary reporting program established in Section 1605b of the Energy Policy Act.

These voluntary avoidances were achieved primarily through increased efficiency and plant uprates. Since 1990, three new nuclear power plants were added to the power grid; Watts Bar in Tennessee and Commanche Peak Units 1 & 2 in North Texas. In addition, the equivalent of sixteen 1,000-megawatt nuclear power plants have been added to the grid through dramatic increases in electricity output. These "virtual" new power plants have allowed the United States to avoid millions of additional tons of harmful air emissions, while also being one of the most successful energy efficiency programs of the last decade.

But not all of this progress is being captured effectively in the current 1605b program. NEI supports the provisions of S. 882 that improve the National Inventory and Voluntary Reporting provisions in Section 1605b. Specifically, the bill recognizes that a ton avoided is as valuable as a ton reduced, and ensures that avoided greenhouse gas emissions will be equally registered and recognized in Department of Energy programs. DOE should develop standardized benchmark measurements for calculating emissions avoided. These could be based on emission levels of likely substitute generation.

Right now, most companies calculate avoidances through internal offsets because they also own emitting plants. With a benchmark based a standardized figure, such as the emission rate in the power pool, companies that own and operate primarily avoidance technologies can still participate in the program. This need for standardized benchmarking holds true for all non-emitting technologies such as hydro and renewables -- production increases at those facilities should not have to rely on offsets against co-owned emitting generation to be counted and recognized. These accounting improvements will help achieve a goal of your bills -- use accurate and transparent government sponsored reporting to identify the technologies that are managing greenhouse gas emissions so consumers and the market can respond.

FUTURE INCREASES IN NUCLEAR ENERGY R&D FUNDING VITAL

The current fleet of nuclear energy plants has done yeoman's duty in the overlapping demands of energy and environmental policy requirements. Nuclear power plants have reduced America's dependence on foreign oil, safely and reliably provided 20 percent of the country's electricity, successfully managed our used fuel and avoided emitting billions of tons of pollutants into the air. And, our industry provides the major contribution to carbon risk management.

Population growth and economic expansion are expected to increase U.S. electricity demand by 50 to 75 percent over the next ten years. To meet more stringent Clean Air Act requirements and effectively manage carbon risk, the United States must increase its percentage of available non-emitting sources of electricity, such as nuclear energy, solar, hydro and wind, above the current baseline of 30 percent. Of these technologies, nuclear energy is the only expandable, large-scale electricity source that avoids emissions and can meet the baseload energy demands of a growing, modern economy. The current assets have only a finite potential remaining to enhance these services through up-rates, improved efficiency, and license renewals for an additional 20 years. The industry and the country must begin planning now to build new nuclear plants.

Continued research and development will be key to maintaining existing capacity and bringing on new plants to meet our future environmental challenges. In comparison to other electricity generating sources, nuclear energy is unequivocally the most economical federal research and development investment. In 1998, the federal government spent one penny on nuclear energy R&D for every kilowatt-hour of electricity generated at nuclear power plants. By comparison, the cost of natural gas R&D per kilowatt-hour generated, was 36 cents; for solar photovoltaics, \$21,566; and for wind energy \$10,700. Today's high-tech industries either adjust to rapidly changing circumstances or they fall behind their competitors. Obtaining a fair share of our nation's R&D funding is essential for the expanded utilization of our nation's clean non-emitting nuclear energy.

Both S. 882 and S. 1776 recognize that the pace of research and development of advanced energy technologies that can reduce greenhouse gases is too slow and that most programs are under-funded. NEI believes that adequate funding of current programs coupled with the additional funding provided in these bills, will go a long way to ensuring that the United States maintains its leadership around the world in avoidance technologies capable of cutting back greenhouse gases emission levels while supporting sustainable development.

The President's Committee of Advisors on Science and Technology (PCAST) shares this view. Their recent report acknowledge the importance of nuclear energy to avoiding carbon

emissions and suggests that the Administration should recognize nuclear energy as an energy option that could contribute substantially to meeting national and international goals. Programs such as the Nuclear Energy Research Initiative (NERI), and Nuclear Energy Plant Optimization (NEPO) should be funded at levels double the Administration's 2001 budget request. These programs are designed to produce generic improvements that reduce capital and operating cost for both current and available advanced designs. Although DOE's Energy Information Agency (EIA) continues to grossly overstate the cost of advanced nuclear generation at \$2,390 per kilowatt of capacity, detailed engineering estimates put the figure at \$1,500.00 and dropping. Our nation's energy and security needs and environmental goals demand that we continue programs that will make nuclear energy technology available today and for future generations. Funding also is important for the Energy Department's University Support Program, that helps maintain research reactors and enhances educational programs in nuclear science and technology at colleges and universities.

NEI also supports funding for current and future waste management technologies important to the nuclear industry. Foremost among these is the federal repository program. Keeping this program on track towards a presidential decision in 2001 on whether or not to proceed with construction of Yucca Mountain is the centerpiece of our national policy for used nuclear fuel disposal. The nuclear industry is encouraged by the impressive scientific foundation for decision-making that has been established and is actively supporting full program funding to ensure that approaching program milestones can be met. Along with repository siting, improved future waste management technologies should be pursued to maximize the value of our disposal capacity. By minimizing waste created and the amounts of fuel used, technologies such as transmutation (the conversion/accelerated decay of used nuclear fuel into less toxic materials) and the Fast Flux Test Facility (FFTF) help improve energy efficiency. These technologies hold promise to help future generations effectively manage and isolate used fuel in geologic repositories.

S. 882 would provide R&D funding to develop new technologies or improve existing technologies, including development of advanced nuclear generation designs, that reduce or avoid greenhouse gas emissions and improve energy efficiency. S. 1776 includes provisions for a Department of Energy review of energy technology research and development. This includes an assessment of the market status of each energy technology, of the potential barriers to deployment of the technology, and of the length of time it will take for commercial use in a manner that will result in meaningful emissions reductions. NEI supports both efforts to ensure that large-scale, non-emitting generation is further developed and expanded to manage future risks from carbon emissions.

In what may be viewed as a response to the energy policy initiatives in this committee's legislation, the Clinton Administration is collaborating with more than a dozen nations to lay the foundation for an international research and development program for globally deployable advanced reactor designs. Known as the International Nuclear Energy Research Initiative (NERI/I), this new nuclear R&D initiative, funded jointly by all participating nations to promote bilateral and multilateral research, is focused on advanced technologies to improve safe and efficient nuclear power plant operation and waste management. NERI is strongly supported by the nuclear industry.

Increased international deployment of nuclear energy will be a key element of the global response to climate change. The Byrd-Hagel Resolution, supported unanimously in the Senate, identified developing country participation in greenhouse gas emission abatement as a

minimum condition to U.S. acceptance of binding emission limitations under the Kyoto Protocol. Large-scale, non-emitting technology like nuclear energy will be undeniably crucial for any meaningful participation in greenhouse gas emission abatement in advanced developing countries like China. For other developing economies that are not yet producing significant levels of greenhouse gases due to lack of economic growth, emission avoidance will be the major alternative available to provide meaningful participation. Research and development that ensures the United States retains its premier place in nuclear technology production is not only a domestic compliance requirement, but also a crucial international need in attaining a global solution to the climate issue.

ELECTRICITY SUPPLY AND CLEAN AIR: A FUTURE THAT NEEDS NUCLEAR ENERGY

The Administration's meager R&D funding requests for nuclear energy point to a disconnect between its rhetorical support for action to address climate change and its lack of active support for the primary technology capable of addressing the issue without crippling the nation's electrical energy supply.

With more than 2,200 reactor years of operating experience, the United States has the largest commercial nuclear power industry in the world. Other nations that rely on nuclear energy to meet both energy and clean air goals -- notably France, Japan and South Korea -- have achieved self sufficiency in nuclear power because of technology transfers and partnerships with U.S. nuclear power plant suppliers. The successful industry/government research and development program that led to the design and certification by the Nuclear Regulatory Commission of three advanced light-water reactor designs is a model of successful R&D in the nuclear energy industry. Fortunately, some of these advanced reactors are being built in Asian markets to meet new electricity demand and as part of their commitments to reduce carbon and other emissions. Unfortunately, the American taxpayers that paid for their design are not similarly benefitting from their use domestically, yet many of our international economic competitors are.

Fortunately, during the 1990s, there was a steady improvement in nuclear power plant safety and production, with the average capacity factor for all 103 nuclear power reactors reaching 86.8 percent in 1999 -- a 9.2 percent increase over 1998. Unfortunately, this efficiency improvement will top out, with no baseload, non-emitting generation increases in the works to enhance our avoidance capability.

Fortunately, owners of the vast majority of nuclear power plants are expected to extend the operating licenses at existing plants for an additional 20 years, a move that will preserve the existing air quality compliance contribution from these facilities. Just a week ago, in a landmark decision, the NRC approved relicensing for two reactor units at Calvert Cliff's plant in Maryland. Twenty-eight other units have either begun the renewal process or announced their intention to do so. Unfortunately, future air quality compliance requirements, including carbon risk management, will need more than just continued operation of existing facilities to succeed.

Our growing economy in the digital age will compel more -- not less -- electricity use in the future. At the same time, many non-emitting sources will find it difficult to increase their contribution. Hydropower generates about 10 percent of U.S. electricity, but the Energy Information Administration projects an increase of less than 1,000 megawatts of hydropower by 2020. There may be significant opportunities to expand other non-emitting renewables, such as solar and wind, but those sources require dwindling land resources and may not be co-located

with demand. Therefore, additional nuclear energy remains the primary emission-free option to power economic growth.

In recent years, state and federal initiatives have launched a more competitive electricity industry. As companies prepare to do business in this new competitive electricity market, the unbundling of their products and services will require a re-examination of costs and allocation of value to activities that previously were not valued. The importance of nuclear energy to clean air and carbon abatement is one of these previously unvalued services for which companies must receive economic benefit to prevent competitive disadvantages and position nuclear power plants to continue their crucial environmental contribution. Any plausible strategy to mitigate greenhouse gas emissions will require an expanded contribution of nuclear energy in the United States and around the world.

Nuclear energy remains a cost competitive alternative in the emerging deregulated electricity market. Free-market competition demands that the "playing field be level" for all electric utility companies. In addition to ensuring future R&D funding for nuclear energy, Congress also must pave the way for sensible, market-based business decisions that will preserve and extend the operation of today's nuclear power plants. These include a streamlined, objective NRC licensing process, the elimination of unnecessary requirements that may prevent effective ownership transactions in a competitive market, and the implementation of the nation's program for safe, centralized disposal of used nuclear fuel.

And most importantly, public policy incentives to encourage carbon abatement or avoidance technologies must be equally applied, be they production and/or investment tax credits to address climate change, access to market-based pollution control mechanisms, or access to favorable financing and other funding mechanisms. Equal treatment in these market and incentive programs will allow new nuclear plants to effectively compete with alternative forms of generation, ensuring that nuclear energy's unique ability to provide energy security and environmental protection remains available to the American economy and American way of life.

CONCLUSION

Next month, America will celebrate the 30th anniversary of Earth Day, and the significant environmental strides we have made since 1971. One of the most prominent environmental protection advancements in the industrial sector during this time has been the increased reliance on nuclear energy to power our fast-growing digital economy. Congress should not lose sight of this important clean air and greenhouse gas compliance tool, and policymakers should employ a strategy that maximizes nuclear energy's potential to improve air quality. Research and development funding, streamlined business regulation, waste management program implementation, and equal access to incentives will ensure that nuclear energy will continue to help meet our nation's intertwined public policy goals regarding energy production and environmental protection.

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Full Committee Hearing Information:

Hearing: To receive testimony on the following bills: S. 882 - Energy and Climate Policy Act of 1999; and S. 1776 - Climate Change Energy Policy Response Act.

Date and Time: Thursday, March 30, 2000 9:30 am Senate Dirksen Office Building, Room 366

Location: Senate Dirksen Office Building, Room 366

Witness Name and Title:
The Honorable Robert Byrd, United States Senate
The Honorable Chuck Hagel, United States Senate

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2

Kurt E. Yeager, President and Chief Executive Officer, Electric Power
Research Institute, Palo Alto, CA

Robert N. Burt, Chairman, The Business Roundtable, Washington, DC

Joel Colvin, President and Chief Executive Officer, Nuclear Energy Institute, Washington, DC

General Richard Lawson, President, National Mining Association, Washington, DC

Charles D. Estes, Estes and Associates, Arlington, VA

Michael Marvin, President, Business Council for Sustainable Energy, Washington, DC

Dr. Dan Lashof, Senior Scientist, Natural Resources Defense Council, Washington, DC

Maggalean W. Weston

Mrs. Weston holds a B.S. degree in Physics. In addition, she has done graduate study in Systems Analysis/Operations Research, Mathematics, and Business Administration at American University, George Washington University and the University of Maryland, respectively.

Mrs. Weston has more than 20 years of experience at the Nuclear Regulatory Commission. Immediately prior to coming to ACRS, she served as Technical Assistant to Sam Collins, Director, NRR. She previously worked on the EDO's staff and in the Technical Specifications Branch (TSB) in NRR. In TSB, Mrs. Weston was responsible for the development of the Reactor Coolant System, ECCS, and the Refueling System sections of the Improved Standard Technical Specifications (STS). She was also responsible for the review and acceptance of these same sections for 19 nuclear power plants that converted from their current technical specifications to the STS.

Mrs. Weston worked as a research physicist on the Director's staff at the Naval Research Laboratory and as a research physicist at the David Taylor Navel Ship Research and Development Center.

Mrs. Weston is a member of The American Physical Society and the Institute of Electrical and Electronics Engineers (IEEE). Mrs. Weston was named an Outstanding Young Woman in America in 1972.

Jenny Gallo joined the Operations Support Branch of the ACRS/ACNW staff on April 10, 2000. Jenny has been with the Government for approximately ten years. For the five years prior to joining the ACRS/ACNW staff, she served as Unit Chief for Program Accountability at the U.S. Department of Labor, Employment Training Administration, Office of Job Corps. The Job Corps Program is a national residential training program for disadvantaged youth. It has an annual operating budget of over one billion dollars. As Unit Chief, Jenny was responsible for managing national operations relating to all aspects of program accountability. Jenny's duties included managing a team of fifteen; establishing qualitative and quantitative national performance standards; managing contracts in excess of three million dollars; and producing Job Corps' Annual Report to Congress.

Jenny Graduated in 1982 with B.S. Degree in Sociology from Northeastern University. She was born and raised in Watertown, Massachusetts.

TSTF 358 - Missed Surveillances

- Plant risk decision process
 - Reference Reg Guide 1.182 -
Maintenance Rule (a)(4) guidance
 - ◆ Treat missed surveillance as emergent
condition
 - ◆ Temporary, aggregate risk impacts
 - ◆ Risk management actions
 - ◆ Control of additional emergent work

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Missed Surveillances

- Risk decision process
 - Use RAW as screen
 - Change failure rates to address missed surveillance
 - Qualitative methods may be used



TSTF-359 Mode Change Restraints

- Based on owners group transition risk models
 - CEOG model showed most plant systems have insignificant risk effects
 - Other OG to develop similar models
- Must meet AOT or return to previous mode



Requests for Risk Information

- Industry position
 - Concur that in rare instances, risk issues should be addressed even though licensing basis met
 - NRC legal authority constrained to circumstances of “significant and unanticipated risks”
 - Otherwise would be defacto new licensing basis



Requests for Risk Information

- Industry position
 - Continue policy of Commission notification
 - Better definition of “significant and unanticipated risk”
 - Acknowledge industry burden in responding to request

Requests for Risk Information

- Industry position
 - Quantitative guidelines of Reg Guide 1.174 may not be appropriate for this purpose
 - ◆ Small change versus significant risk impact
 - ◆ Reg Guide acknowledges it goes beyond adequate protection

Initiative 2 - Missed Surveillances

ACRS Subcommittees

April 28, 2000

NEI

Missed Surveillances

- Current requirement is to enter LCO (shutdown requirement) if surveillance cannot be performed within 24 hours plus existing AOT
- Proposed change: Perform missed surveillance at next reasonable opportunity, up to surveillance interval

Missed Surveillances

- Risk Evaluation is required for all extended surveillances, greater than 24 hours:
 - May be qualitative or quantitative
- All missed surveillances are placed in the licensee's corrective action program
 - assures no increase in missed surveillances

*Oversight process
Unavailability*

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Missed Surveillances

- Risk impact of missed surveillances should be considered
 - Factor into configuration control (work plan)
 - Risk management actions (including shutdown)
 - Same as emergent condition for MR (a)(4) - NRC Reg Guide 1.182



Risk Evaluation Issues

- Risk impact of a single missed surveillance can be approximated by F-V importance measures
 - Screening process can be developed to expedite process, based on (a)(4) or PRA results
 - The impact of many surveillance time increases cannot be determined by the PRA, so alternate analysis methods should be allowed



Conclusions

- Most Surveillances are low importance
 - Avoiding shutdown results in a risk reduction
- For missed Surveillances that are potentially high risk, the safest course of action will be determined:
 - For components where shutdown is the highest risk path, change represents a risk reduction
- Overall, change is a risk reduction to risk neutral.

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Risk-Informed Technical Specifications

May 11, 2000

Robert Dennig, Technical Specifications Branch
Mark Reinhart, Probabilistic Safety Assessment Branch
Nanette Gilles, Technical Specifications Branch
Office of Nuclear Reactor Regulation

Plant Operations and PRA Subcommittee Concerns

- ✓ Need for details for plant risk decision process
- ✓ Need for quality PRA and tools
- ✓ Understanding of oversight process role
- ✓ Need for public involvement, public support
- ✓ Affect on safety culture
- ✓ Programmatic aspects for NRC staff

Details of Plant Risk Decision Process

- ✓ Owners Groups including more detail in Revision 1 of TSTF-358 & TSTF-359**
- ✓ Risk/reliability calculations to assess risk significance of missed surveillance**
- ✓ Staff safety evaluation will outline required decision process characteristics**
- ✓ Individual plant amendment requests will include more detail if necessary**

05/11/00

3

Quality PRA and Tools

- ✓ Owners Groups performing peer certification, cross comparisons, independent reviews**
- ✓ Maintenance Rule (a)(4) guidance proposes recommended PRA model characteristics**
- ✓ Staff safety evaluation will identify necessary characteristics of tool for application**

05/11/00

4

Oversight Process Role

- ✓ Ongoing discussion
- ✓ Specific Inspection Procedures
 - Surveillance Testing (71111.22)
 - Maintenance Risk Assessments and Emergent Work Control (71111.13)
 - Identification and Resolution of Problems (71152)
- ✓ NRR involved with RES Risk-Based Performance Indicator program

05/11/00

5

Public Involvement & Support

- ✓ Early dialogue with concerned groups
- ✓ Consolidated Line Item Improvement Process
 - Generic safety evaluations published for public comment
 - Notices published for individual amendment requests
- ✓ Communications plan needed

05/11/00

6

Affect on Safety Culture

- ✓ Premise is that licensees will operate their plants safely**
- ✓ Inspection process will look for programmatic breakdowns**
- ✓ Annual Problem Identification and Resolution Inspection includes assessment of safety conscious work environment**
- ✓ Safety culture should improve by allowing resources to focus on risk-significant aspects of plant operation**

05/11/00

7

NRC Staff Programmatic Aspects

- ✓ NRR Involved with RES Risk-Based Performance Indicator program**
- ✓ Communications plan needed**

05/11/00

8



*United States
Nuclear Regulatory Commission*

Potential Revisions to
PTS Screening Criterion

Mark Cunningham
Division of Risk Analysis and Applications
Office of Nuclear Regulatory Research

Ed Hackett
Division of Engineering Technology
Office of Nuclear Regulatory Research

Presentation to
Advisory Committee on Reactor Safeguards

May 11, 2000

Overview

- Discuss draft Commission paper on PTS screening criterion
 - Purpose of draft Commission paper
 - PTS accidents and screening criterion
 - More recent information:
 - Materials research
 - Commission guidance
 - Approaches for revisiting screening criterion
 - Intended staff approach
- Solicit ACRS comment on proposed staff approach
- No letter requested

Purpose

- Staff has work underway to revise the technical basis for the Pressurized Thermal Shock Rule (10 CFR 50.61), to support a possible rule revision to reflect experience in its implementation and research on the materials properties of reactor pressure vessels.

- Purpose of draft Commission paper:
 - To obtain early review and decisions on intended staff direction with respect to revisions to one part of the screening criterion used in the PTS Rule

 - To inform Commission of intended staff direction

PTS Accidents and Acceptance Criterion

PTS Accidents

- Initiators
 - Small LOCAs or transients which lead to rapid overcooling and repressurization
- Vessel response
 - Preexisting flaws may lengthen and deepen; some fraction of these will extend through the vessel wall
 - Through-wall crack expands rapidly to large opening
 - Core coolability (assumed) lost

PTS Accidents and Acceptance Criterion

PTS Accidents (cont.)

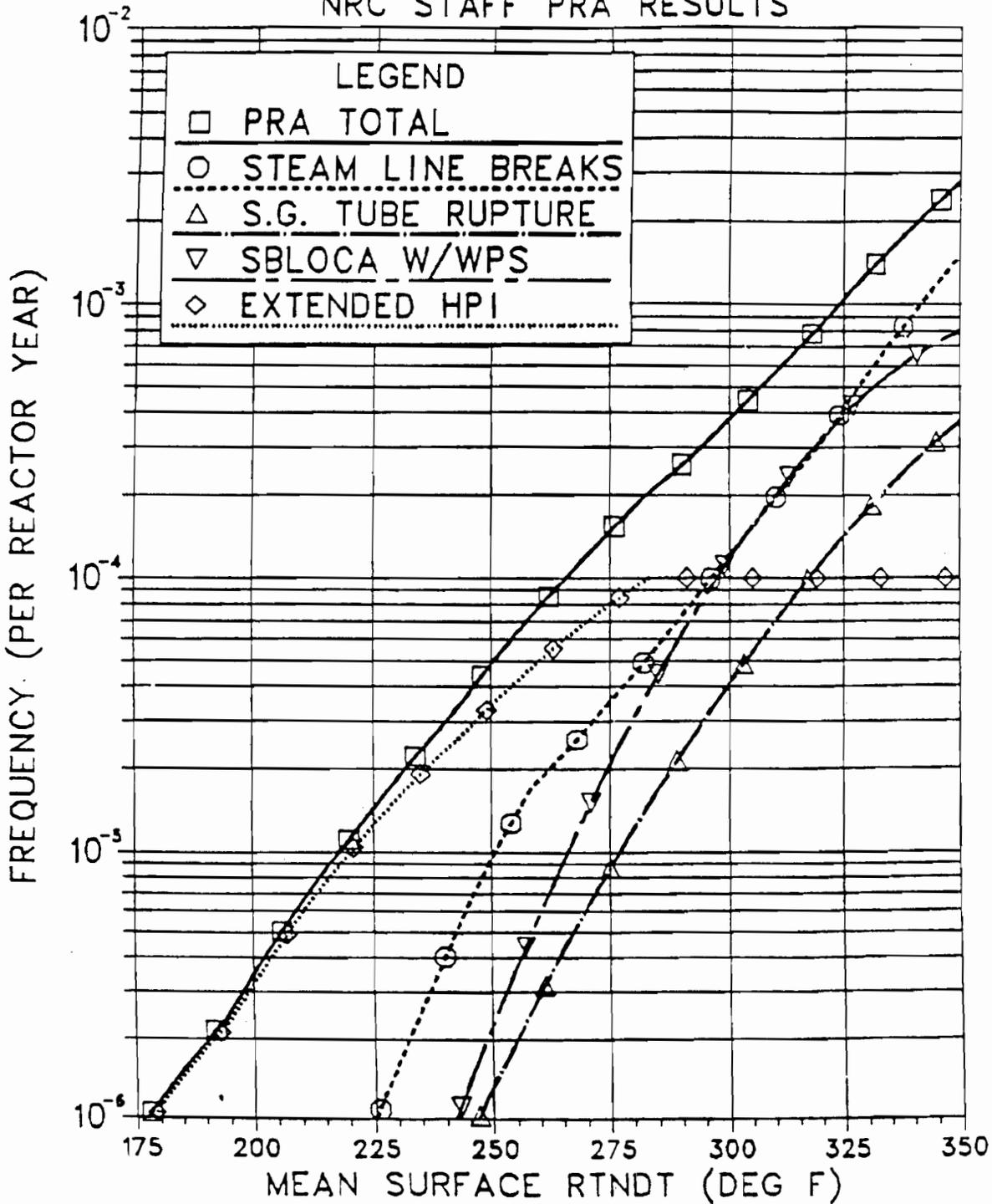
- Containment response
 - Dynamic loadings on core and vessel internals
 - Dynamic loadings on reactor vessel and piping
 - Containment pressure loadings
 - Dispersal and coolability of core material
 - Availability of water
 - Availability of containment engineered safety features

PTS Accidents and Acceptance Criterion

Acceptance Criterion

- ❑ PTS Rule issued in 1983 as adequate protection rule
- ❑ Established an acceptance criterion (embrittlement screening criterion), above which licensees are required to demonstrate pressure vessel safety
- ❑ Associated with screening criterion is a frequency of a through-wall crack in the pressure vessel
 - ❑ RT_{PTS} of 270°F linked to 5×10^{-6} per reactor year
 - ❑ RG 1.154 - frequency of 5×10^{-6} per reactor year is "acceptable"

LONGITUDINAL CRACK EXTENSION NO ARREST
 NRC STAFF PRA RESULTS



PTS Acceptance Criterion (cont.)

PTS Acceptance Criterion (cont.)

- Key underlying assumptions
 - Through-wall crack frequency of 5×10^{-6} per reactor year is acceptable
 - Through-wall crack equivalent to:
 - large opening in reactor vessel
 - core melt
 - Containment performance not substantially impaired by PTS event

Materials Research

Flaw Size, Density, and Location Distributions

- Examination of an actual unused PWR vessel in the Pressure Vessel Research User Facility (PVRUF)
- Examination of Shoreham reactor vessel
- Analysis of NDE/DE data from River Bend-2 and Hope Creek-2 vessels welds and NDE of PVRUF plate material
- Development of generalized statistical distributions on flaw sizes, flaw locations and flaw densities in welds and base-metals

Materials Research (cont.)

Irradiation Embrittlement Correlations

- ❑ Improvements to embrittlement correlations; ongoing refinement to include more recent embrittlement data, effect of long irradiation exposure time at vessel normal operating temperatures, and statistical uncertainties in the predicted shift in RT_{NDT}

Statistical Distributions for Material Fracture Toughness

- ❑ Extension of the original ASME fracture toughness databases and development of rigorous statistical distributions for $K1c$ and $K1a$.

Statistical Distributions for Material Chemistry and Initial RT_{NDT}

- ❑ Development of statistical distributions for plant-specific material chemistry (nickel, copper) and initial RT_{NDT} (RT_{NDT0}) to represent the local variability of plate and weld materials

Materials Research (cont.)

Beltline Vessel Fluence Calculations

- Calculation of end-of-life fluence values for each of the plants that are being studied in the PTS Rule reevaluation; based on up-to-date information of the plant's cycle-by-cycle fuel loading history and the draft regulatory guide DG-1053 proposed method

Improvements in Fracture Mechanics Methods

- Improvements in FAVOR, including treatment of:
 - The effect of clad to base-metal differential thermal expansion induced residual stress
 - The residual stress distribution through the vessel
 - The stress intensity factor, K , solutions for semi-elliptical surface flaws have been determined for clad vessels
 - The stress intensity factor, K , solutions for elliptical sub-surface (embedded) flaws

Commission Guidance

- Safety Goal Policy Statement
- Station blackout and ATWS rules
- Backfit rule
- Regulatory Guide 1.174

Commission Guidance (cont.)

- ❑ Safety Goal Policy Statement
 - ❑ Defined qualitative and quantitative goals for acceptable risk
 - ❑ Subsequent Commission decisions established a subsidiary core damage frequency goal of 1×10^{-4} per reactor year
 - ❑ Intended for generic decisions using industry-average core damage frequency and risk estimates.

- ❑ Station Blackout and ATWS Rules
 - ❑ Developed as cost-beneficial safety enhancements
 - ❑ Used probabilistic goals for the acceptable frequency of core-damage accidents
 - ❑ Justified on averted offsite risk basis

Commission Guidance (cont.)

- ❑ Backfit Rule (and Regulatory Analysis Guidelines)
 - ❑ Includes initial screening on potential reductions in CDF and conditional probability of early containment failure
 - ❑ Uses screening criteria based on the Safety Goal QHOs and subsidiary CDF goal
 - ❑ Uses final decision criteria based on averted public risk

- ❑ Regulatory Guide 1.174
 - ❑ Describes a set of general principles for risk-informed license changes
 - ❑ Provides probabilistic guidelines defining acceptable changes in CDF and LERF
 - ❑ Consistent with Safety Goals and Regulatory Analysis Guidelines

Approaches for Revisiting Screening Criterion

- ▶ Make no change to the core damage frequency value underlying the screening criterion.
- ▶ Utilize a core damage frequency similar to those for the ATWS and Station Blackout Rules.
- ▶ Apply current risk-informed regulation principles (defined in RG 1.174; used in Part 50 technical requirements framework) to define extent of change
 - ▶ defense in depth
 - ▶ safety margins
 - ▶ small CDF and LERF changes
 - ▶ maintain separate CDF and LERF acceptance guidelines
- ▶ Apply current risk-informed regulation principles (defined in RG 1.174; used in Part 50 technical requirements framework) to define extent of change
 - ▶ defense in depth
 - ▶ safety margins
 - ▶ small CDF and LERF changes
 - ▶ set single CDF/LERF acceptance guideline

Approaches (cont.)

- ❑ Make no change to the core damage frequency value underlying the screening criterion
 - ▶ Would keep the focus the rule's technical basis revision on PTS technology improvements; would then reduce the complexity of a proposed rule revision.
 - ▶ Would not require the resolution of the issue of containment performance during PTS accidents and related uncertainties
 - ▶ Would not make use of the considerable advances made in agency guidance on use of PRA development since the rule was completed in 1983

Approaches (cont.)

- Utilize CDF consistent with Station Blackout and ATWS Rules
 - ▶ Would establish greater consistency among the three major risk-informed rules and associated CDFs.
 - ▶ Increase in CDF which would be permitted by this option would be near the limit of those permitted in Regulatory Guide 1.174
 - ▶ Would require considerable additional work to establish consistency in containment performance and offsite risk estimates

Approaches (cont.)

- ❑ Apply RIR principles and acceptance guidelines
 - ▶ Would be most consistent with the Commission's most recent PRA policy implementation guidance (in RG 1.1740 and staff's approach in Part 50 technical requirements study)
 - ▶ Would explicitly include in the reevaluation the consideration of defense-in-depth and safety margins issues
 - ▶ would maintain the acceptable CDF at a value essentially no higher than it is now
 - ▶ Would introduce consideration of containment performance and offsite risk via the use of the guide's LERF guideline
 - ▶ Would require staff resolution of the issue of containment performance during PTS accidents and related uncertainties, and the acceptability of a large early release frequency

Approaches (cont.)

- ❑ Apply RIR principles and acceptance guidelines, assuming CDF and LERF are equivalent
 - ▶ Would be generally consistent with the Commission's most recent PRA policy implementation guidance and Part 50 technical requirements framework
 - ▶ Would explicitly include in the reevaluation the consideration of defense-in-depth and safety margins issues
 - ▶ Would reduce the acceptable CDF to 1×10^{-6} per reactor year, since CDF and LERF are presumed to be equivalent.
 - ▶ Could include provision for plant-specific containment analysis to relax acceptable CDF value.

Staff's Intended Approach

- Apply RIR principles and acceptance guidelines

- Address two key issues
 - Potential for large early release in PTS accident

 - Application of RIR principles and Option 3 framework to risk-informed change to adequate protection rule

Next Steps

- Revise Commission paper
 - Information paper
 - Identify and discuss approaches
 - Identify key issues - adequate protection rule change and LERF
 - Add short descriptions of
 - PTS rule revision program
 - PTS accidents (including potential impacts on containment)
- Provide revised draft to NRR, OGC; resolve comments
- Address Full Committee comments
- Provide to EDO - May 24

Next Steps (cont.)

- Continue technical basis revision
 - Reflect Commission decisions
 - Continue PRA/HRA and thermal hydraulic analyses
 - Complete development of generalized statistical distributions on flaw sizes, flaw locations and densities in welds and base-metals
 - Complete development of material chemistry distributions
 - Continue development of embrittlement correlations
 - Continue development of updated fluence maps
 - Complete development of fracture toughness (K_{1c} , K_{1a}) statistical distributions

- Provide next update to ACRS (August/September)
 - Commission guidance on screening criterion
 - Generalized flaw distributions
 - Materials-related developments (chemistry, embrittlement, fluence, fracture toughness)
 - Uncertainty analysis methodology
 - Some of the initial analyses for a PTS plant (PRA/HRA, TH, possibly PFM)

NRR STAFF PRESENTATION TO THE ACRS

**SUBJECT: Guidelines for Using Risk Information in Regulatory
Decisionmaking**

DATE: May 11, 2000

PRESENTER: Robert L. Palla

**TITLE/ORG: Sr. Reactor Engineer
Probabilistic Safety Assessment Branch
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation**

TELEPHONE: 415-1095

BACKGROUND

- **1995 PRA Policy Statement encourages increased use of PRA in regulatory activities**
- **Licensees are not required to consider/submit risk information**
- **Existing regulatory guidance (e.g., RG 1.174) is geared to situations in which the licensee voluntarily chooses to support licensing actions with risk information**
- **Policy and process guidance are needed to deal with proposed license actions that:**
 - **are not risk-informed, and**
 - **satisfy existing design and licensing bases, but**
 - **introduce significant and unanticipated risks**
- **Staff committed to provide clarifying guidance for Commission approval (SECY-98-300)**

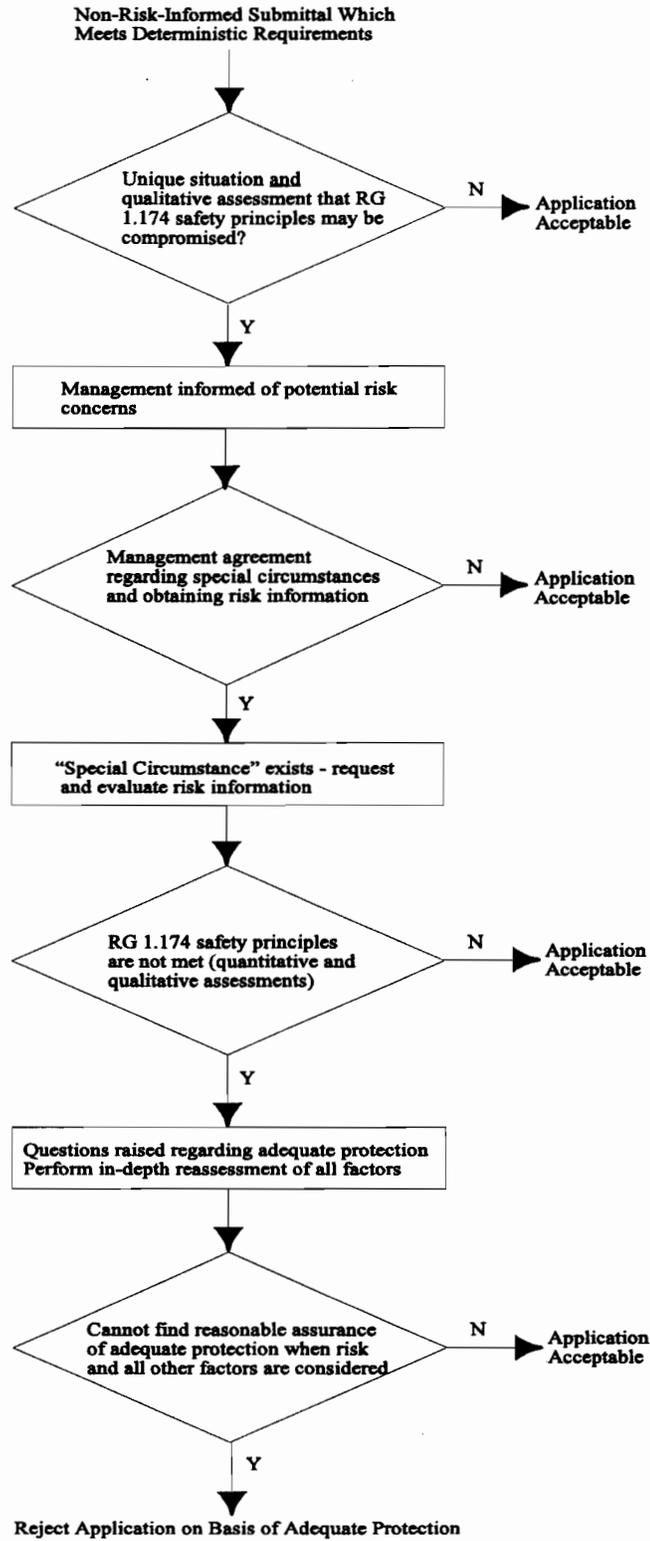
CHRONOLOGY

- 12/98** Staff recommends developing guidance to clarify its authority for applying risk-informed processes in non-risk informed licensing actions (Policy Issue 4 in SECY-98-300)
- 6/99** Commission approves development of clarifying guidance
- 8/99** Review of electrosleeve amendment for Calloway highlights the need for clear policy and process guidance (SECY-99-199)
- 9/99** Proposed guidance discussed with ACRS Full Committee
- 10/99** Staff submits proposed interim guidance to Commission (SECY-99-246)
- 1/00** Commission approves interim use of guidance while staff finalizes regulatory guidance documents
- 3/00** Industry informed of interim guidance via Regulatory Issue Summary 2000-07
- 4/00** Proposed SRP appendix issued for review and comment (ACRS, CRGR, public)

PROPOSED APPROACH (SECY-99-246)

- **Establish concept that proposed license amendments could create “special circumstances” under which the regulations do not provide the intended or expected level of safety, and plant operation may pose an undue risk**
- **When “special circumstances” may be created, staff will:**
 - **explore underlying engineering issues contributing to risk concern**
 - **obtain management buy-in regarding risk concern**
 - **request additional information to address risk and RG 1.174 safety principles**
 - **not issue the amendment until it has assessed risk implications sufficiently to determine there is reasonable assurance of adequate protection**
- **Use safety principles and decisionmaking process in RG 1.174, and the standard of exceeding the acceptance guidelines as a trigger at which questions are clearly raised as to whether adequate protection is reasonably assured**
- **Further evaluate special circumstances, safety principles, and other factors if trigger is exceeded**
- **Base final acceptability on consideration of regulatory requirements and adherence to safety principles, and not solely on comparison with numerical acceptance guidelines**

Figure 1 - Process and Logic for Considering Risk in License Amendment Reviews



MODIFICATIONS TO GUIDANCE DOCUMENTS

- **New appendix to Chapter 19 of Standard Review Plan providing guidance to risk analyst on use of risk information in review of non-risk informed license amendments**
- **Limited modifications to text of SRP 19 and RG 1.174 to refer to new appendix**
- **Conforming changes to Office Letter 803, "License Amendment Review Procedures"**

NEW APPENDIX TO SRP

- **Mirrors SECY-99-246 approach and language rather than create new concepts or language**

- **Provides additional description of the threshold/criteria for an issue to be considered a "special circumstance"**
 - **situations not identified or addressed in development of regulations, and important enough to warrant a new regulation if encountered on a widespread basis**

 - **reviewer has: (1) knowledge that risk impact is not reflected by the licensing basis analysis, and (2) reason to believe that risk increase would warrant denial if the request were evaluated as a risk-informed application**

- **Includes examples of situations that could create "special circumstances" (bullets middle of page 3)**

MODIFICATIONS TO TEXT OF SRP 19 AND RG 1.174

- **Indicates that “special circumstances” may exist even when all regulatory requirements are met**
- **Indicates that in those situations staff may request risk related information and will not approve the requested change until it has determined that public health and safety will be adequately protected**
- **Refers to the new appendix regarding the use of risk information in the review of such requests**

CHANGES TO OFFICE LETTER 803

- **Guidance for processing license amendments is provided in OL 803, "License Amendment Review Procedures"**

- **Recent OL revision (Rev. 3, 12/99) added general guidance on types of amendment requests on which risk analyst should be consulted**
 - **screening questions based on analysis of previous amendment requests**

 - **includes "special circumstances" as one consideration**

 - **does not describe what constitutes special circumstances**

- **OL 803 update will include clarification regarding screening process and special circumstances**

SCHEDULE FOR COMPLETING GUIDANCE
(per 2/14/00 response to SRM)

Issue Regulatory Issue Summary describing interim guidance **3/2000C**

Develop mods to SRP 19 and RG 1.174

- ▶ **Transmit draft mods to ACRS, CRGR, public** **4/2000C**
- ▶ **Meet with stakeholders, ACRS, CRGR** **5/2000**
- ▶ **Resolve comments and transmit proposed final mods** **7/2000**
- ▶ **Meet with ACRS and CRGR on proposed final mods** **8/2000**

Develop mods to Office Letter 803 **9/2000**

Transmit final mods to Commission (SRP 19, RG 1.174, OL 803) **9/2000**

Requests for Risk Information

- Industry position
 - Concur that in rare instances, risk issues should be addressed even though licensing basis met
 - NRC legal authority constrained to circumstances of “significant and unanticipated risks”
 - Otherwise would be defacto new licensing basis

NEI

Requests for Risk Information

- Industry position
 - Continue policy of Commission notification
 - Better definition of “significant and unanticipated risk”
 - Acknowledge industry burden in responding to request

NEI

Requests for Risk Information

- Industry position
 - Quantitative guidelines of Reg Guide 1.174 may not be appropriate for this purpose
 - ◆ Small change versus significant risk impact
 - ◆ Reg Guide acknowledges it goes beyond adequate protection

SRP Development for T/H Code Reviews

Joe Staudenmeier
Reactor Systems Branch, NRR
Email: JLS4
Phone: 415-2869

Presentation to ACRS
May 11, 2000

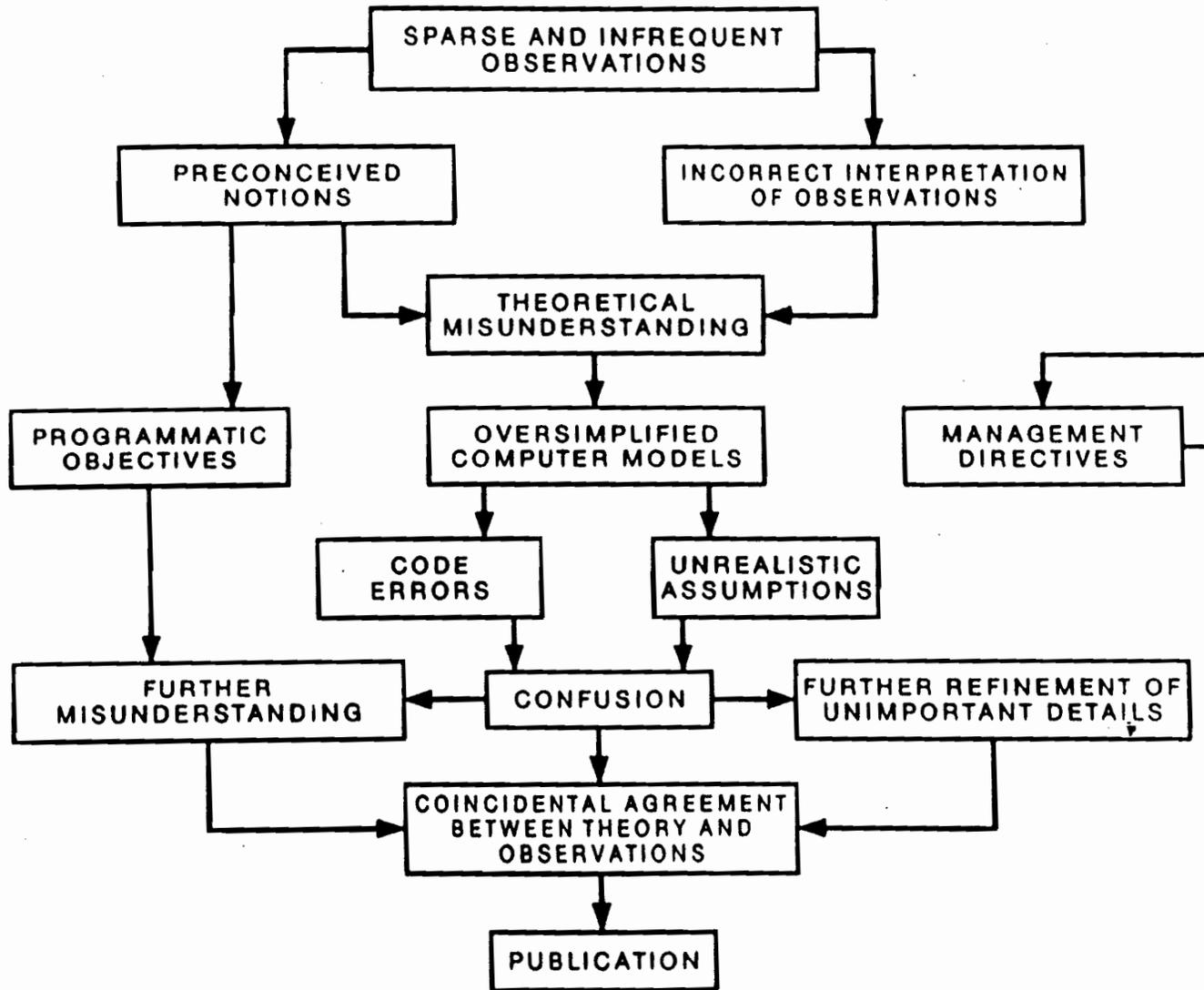
**Problems Identified by Maine Yankee
ISAT (and ACRS in AP600 and Other
Reviews)**

Adequacy of Code Documentation

Adequacy of Code Assessment

Inconsistencies in Staff Code Review Process

FLOWCHART: COMPUTER MODEL DEVELOPMENT



Activities

Develop Standard Review Plan Section (NRR Lead)

**Develop Standard Format and Content Guide /
Regulatory Guide (RES Lead)**

The Code SRP Topics

Areas of Review are consistent with the Reg. Guide. General principles applicable to all analytical computer codes covering key areas of review:

Documentation

Accident Scenario and Process Identification

Code Theory

Code Assessment

Plant Modelling

Quality Assurance

Confirmatory Analysis

Revisions to Previously Approved Models

Details will be provided for certain accident and accident classes in Appendices for:

Modeling Requirements (Physical and Plant)

Code Assessment

The Code SRP Organization

The Organization of the Code SRP Section Follows the Existing SRP Format.

I. AREAS OF REVIEW

Describes the scope of the review

II. ACCEPTANCE REVIEW

Describes the acceptance criteria for each area

III. REVIEW PROCEDURES

Describes the review procedures

IV. EVALUATION FINDINGS

Describes the requirements for documenting the review findings

V. REFERENCES

Future Actions

Incorporate ACRS comments into Draft SRP Section and Reg. Guide

Provide for CRGR Review

Solicit public comments on Draft SRP Section and Reg. Guide

Resolve Public Comments

Issue final versions of SRP and Reg. Guide

Develop Appendices for review of analytical codes for specific transient or accident classes.

ACRS MEETING HANDOUT

Meeting No. <p style="text-align: center;">472nd</p>	Agenda Item <p style="text-align: center;">5.0</p>	Handout No.: <p style="text-align: center;">5-1</p>
Title: <p style="text-align: center;">CONSULTANTS' REPORTS - APRIL 27, 2000 T/H PHENOMENA SUBCOMMITTEE MEETING</p>		
Authors: V. SCHROCK/ N. ZUBER		
List of Documents Attached : <ol style="list-style-type: none"> 1. Report from ACRS Consultant V. Schrock on April 27, 2000 T/H Phenomena Subcommittee Meeting, dated May 5, 2000 2. Excerpt from Memorandum to G. B. Wallis, from N. Zuber, ACRS Consultant, Subject: The Effect of Deregulation on NRC's Capabilities in the Field of Thermal-Hydraulics, dated April 6, 2000 		<h1>5</h1>
		From Staff Person <p style="text-align: center;">P. BOEHNERT</p>

FOR ACRS INTERNAL USE ONLY

From: "Virgil E. Schrock" <schrock@nuc.berkeley.edu>
To: Paul Boehnert <PAB2@nrc.gov>
Date: Fri, May 5, 2000 5:38 PM
Subject: Report on April 27, 2000 Subcommittee Meeting

Here is my report. A paper copy is in the mail to Paul.

Virgil E. Schrock
258 Orchard Road
Orinda, California 94563
(925) 254-3252
schrock@nuc.berkeley.edu

To: Dr. Graham Wallis, Chairman, Subcommittee on Thermal
Hydraulics
Phenomena
Via: Paul Boehnert
From: Virgil E. Schrock, Consultant
Subject: Consultant Report on the ^{APRIL 27,}~~MAY 26,~~ 2000 Subcommittee Meeting
on REVIEW OF NRC CODE GUIDELINE DOCUMENTS
Date: May 3, 2000

Background

The draft versions of the revised section of the Standard Review Plan and the Reg Guide were reviewed at the November 17, 1999 meeting of the Thermal Hydraulics Subcommittee. My report on that meeting, dated November 30, 1999, contained the following comments:

"I thought that the Draft REG Guide was well written. My concern is that it really should address the Best Estimate methodology more directly. At the beginning of the effort, it was said that the RETRAN 3D review would provide a basis for development of the REG Guide. If proper guidance had been formulated prior to that exercise, the code should not have been accepted by NRR for review. It lacks the basic elements of a best estimate code. It cannot be regarded as best estimate and there is no way to assess the uncertainty in calculations made using the code. Now I wonder if the new REG Guide would provide clear enough indication to the industry that something like RETRAN 3D could not be sold as a best estimate code."

The pressure on the industry operating in a deregulated environment is to put the best face on old codes and claim them to qualify as best estimate. NRC has accepted CSAU as an acceptable method for quantifying uncertainty but left the door open for industry to develop alternative approaches. Industry finds CSAU to be too expensive but so far has offered very inferior substitutes or watered down approaches to the methodology. I think that it is very important for NRC to tell industry through this REG

Guide just how high the standards must be to qualify a best estimate model. On page 3 at the end of the first paragraph several references are cited of applications of CSAU methodology with "modifications to fit each particular circumstances". I'm not sure I understand the intent here or what guidance is provided. Ref. 5, the SBLOCA exercise done at INEL using RELAP 5, is not a good example of the proper use of the methodology. What does this tell industry about the expectations of NRC?

Criteria for judging the quality of code predictions in relation to both separate effects and integral test data need to be made more quantitative. Under Excellent, a more quantitative meaning should be given for "correctly" and "closely". Are there nonphysical oscillations displayed in the code output? I realize this is a very difficult aspect of the guide but I don't think this version is good enough in this regard. I also would like to see more emphasis on the necessary documentation in terms of completeness and quality. The quality standards of the industry are very low. This REG Guide should also serve to raise these standards.

The issue of user options needs to be addressed in greater depth.

I agree with Dr. Zuber's comment that the Guide should address the requirements of new codes and with Dr. Seale's comment that substantial improvement in T/H codes is needed to support risk informed regulation.

I think the SRP section is also well written but may be further improved. I notice that the INEL RELAP 5 SBLOCA CSAU is again cited as an example of CSAU application by NRC. I don't think it is a good one."

Most of these comments still apply. While I indicated that the SRP needed more work, I failed to give specific suggestions. I will try to be more persuasive in the following discussion of the revision reviewed for the April 27 meeting.

I agree with Dr. Wallis that the SRP is a "higher level" document which should clearly define the process of review and that the Reg Guide should expand upon the SRP and provide useful interpretation for industry as to what NRR will find acceptable. I did not agree that the present version of the SRP is "about right", and promised to provide details of what I believe should be further polished. This follows.

Standard Review Plan

Specific comments on Draft

The version that I reviewed was undated and without page numbers. I have assigned page numbers to my copy for reference purposes. An index may be useful.

REVIEW RESPONSIBILITIES ,page 1: I'm not sure what useful information is provided here. A short narrative describing division or sharing of responsibility for preparing RAIs and other official communications with applicants might be helpful. This might also include description of internal NRC reviews of these matters.

I. AREAS OF REVIEW , page 1: The steps in the review process would be best described here in chronological order. It would be useful to assign numbers to the subsections. This would make the structure of the document more readily understood, more easily referenced and described in an index. I think the first area of review might be the new procedure of the "acceptance review". I do not find this to be clearly laid out as a required first step.

The second sentence in the first paragraph makes reference to the SRP itself as though it were a different document. This paragraph seems to address responsibilities of the NRC reviewers rather "areas of review". The word "should" appears here and throughout the document to express

something that is a requirement. In this paragraph it is applied to an action that will be taken by the NRC staff to determine the relationship of the current review to past reviews, if any. I don't think it addresses this aspect comprehensively. In the bulk of the document there are very many uses of the word "should" applied to things the applicant "must" do. I find a relatively small number of cases where "must" is chosen. I think "must" is the preferred choice in essentially every case. Reference is made to Appendices to be developed in the future. What is the schedule for these and what will serve in the interim? It seems to me that the Areas of Review should be something of a check list but this first page deals largely with background information and lacks focus on Areas of Review.

Evaluation Models are described in general terms without reference to the distinction between the two allowed approaches, a. Appendix K and b. Best Estimate. I find the distinction first mentioned in the last paragraph on page 4. I think it is important to make the distinction at the beginning because the requirements are quite different. Best Estimate models are presumably realistic whereas Appendix K prescribes conservatism and is a distinctly different approach. Best Estimate requires an uncertainty evaluation whereas Appendix K does not. As I understand the law, Appendix K allows use of procedures existing before the rule change. Many viewed it as a grandfather provision to avoid requiring operating plants to go through a re qualification process. My conviction is that this grandfather provision must eventually be phased out. It makes more sense, then, to make the SRP a document that deals with the new rule and relegate the Appendix K exception to an appendix to this chapter of the SRP. Put a brief explanation at the beginning with reference to the appendix.

The CSAU process is first introduced on page 2 via discussion of accident scenario identification and the PIRT process. I think the reference to CSAU should include the series of peer reviewed papers that appeared in Nuclear Engineering and Design. Emphasis is given here to PIRT which is only a piece of the CSAU. Since no distinction has yet been made between App. K and BE approaches the inference seems to be that PIRT is expected for both. Is that now the NRC position? I had not realized that PIRT is now considered required for Appendix K licensing. This needs to be addressed more clearly. In the last paragraph of this section "This description should explicit....." needs to be changed to "This description must explicitly ".

At the bottom of page 2 "...and Correlations Document completely describes..." should be changed to "... and Correlations Document must completely describe " and other "shoulds" be changed to "must" The last paragraph in this section talks about the theory manual which means Code Models and Correlations. If this dual description is to be used Theory Manual should also be capitalized. Clarity could be improved here. The whole section could be improved. It should address so called "modified correlations" which are often found in codes, and the special need to provide reasons and justifications for the changes and the validation against data.

Code Assessment section on page 3 needs to be rewritten to more clearly describe requirements of the process. It needs to more clearly distinguish between assessment of individual models and correlations and integral effects including such matters as difference between local and channel averaged coefficients and transient effects, the roles of nodding and adequacy of plant description, limits on various user options provided

in many codes, time step constraints, stability of solution, need for code "analyst" to intervene or restart a computer run that has stalled, and qualitative and quantitative measures of acceptability of assessment. I don't find scaling distortions addressed.

Code Uncertainty section, starting on page 4, should be improved. It needs to distinguish between the Best Estimate methodology and Appendix K. Where are "design margins" specified? Where in the SRP are "bounding values" and their use described? CSAU is described without clearly giving its status in the regulatory process. The wording here could be interpreted to mean that it must be used. Actually alternatives are allowed and have been included in past submittals that were approved. I see this as a critical area for the maintenance of high standards in regulatory decisions. This document should state that alternative approaches or modifications of the CSAU must be shown to have equal or equivalent ability to quantify the uncertainty in the results obtained from the Evaluation Model. I pointed out in my previous report that reference 4 was a poorly done exercise of the CSAU methodology. This sends a message to industry that poorly done CSAU exercises will be accepted for regulatory decisions.

Code User Manual and Modeling Guidelines, page 4, is described quite superficially. It needs more thought.

II. ACCEPTANCE CRITERIA, page 4. This section has some introductory remarks followed by numbered subsections, e. g., 1. Adequacy of Documentation, but the numbers are missing on the third and subsequent sections. There seems also to be an unnumbered heading before item 1. This shows that an index would have been useful.

I don't know that the references cited are sufficient to define all acceptance criteria. The first paragraph mentions accidents but not plant transients. Are acceptance criteria limited to accident analyses?

The adequacy of assessment should deal with issues of solution stability (what is allowable in numerical oscillations?) and give more emphasis to the problem of choice among multiple models given in the code(s). I don't know the meaning of the last sentence "Acceptance criteria should be supported by quantitative analysis whenever possible" I suspect that it should be omitted.

The handling of the Appendix K option is poor, as noted previously. In the last paragraph of "Adequacy of Assessment", page 6, the requirements of TMI Action Item II.K.3.30 are introduced together with a comment on the Appendix K requirements. Does this mean that the TMI item is required only for the Appendix approach? This should be clarified.

Use of the PIRT, page 6, is superficial. It also implies that assessment is needed only for highly ranked phenomena.

The remaining descriptions under Determination of Model Adequacy, page 7, seem superficial.

Responses to RAIs, page 7. I don't see how this fits clearly into the outline form of the document. Instead of dealing with the applicants responses it appears to try to describe what NRC staff will do. Aren't the RAIs numbered by NRC staff? The sentence "This can be a daunting task for a long review of a large complex evaluation model that stretches of several years" seems inappropriate for the SRP and should be removed. In the last sentence "...should then become ..." should be replaced by "...becomes...".

III. REVIEW PROCEDURES

This section describes NRC staff procedures. Here the word

"should" would be best replaced by "will" since these are NRC commitments. Subsection numbering is resumed in this section. Subsection 1. Assign Review Responsibilities: The last sentence introduces a problem NRR may have but fails to say what action will be taken.

Subsection 2. Acceptance Review, page 8, again describes NRC staff actions. Again the "shoulds" need to be change to "will". The whole section is inadequate for the purpose. The sentence "Submittals that do not contain the required material should be processed in accordance with established procedures for the review of licensee submittals" is particularly vague and useless. The whole section needs rewriting. Begin by telling the reader that this section describes a preliminary process of assessment of the completeness and apparent acceptability of quality of the documents submitted in order to commit NRC to a detailed review of the application. The present section appears to try to avoid a plain language explanation of its purpose.

Subsection 3. Detailed Review of Evaluation Model, page 8, again the word should needs to be changed to will throughout this section. This section could use further review. It doesn't do a good job of describing what the staff will do in its review. This is particularly true of 3.c Code Models and Correlations, page 9. There is not a clear delineation of flow models (conservation equations) and closure relations (correlations) Various statements tend to confuse the two. For example the last paragraph begins "Models that are typically used in nuclear reactor analysis are highly phenomenological and/or empirical in nature." I think this is intended to address correlations, not models (conservation equations). Of course both are "highly phenomenological" and this has little to do with empiricism, which is a method of using experimental data together dimensional analysis to obtain correlations. The correlations relate lumped parameter coefficients (e.g. heat transfer coefficients, friction factors, etc.) to relevant dimensionless system parameters (e. g. Reynolds number, etc.) and serve as closure relations for the simplified conservation equations. In one sentence it is said that these models "represent processes that we do not have sufficient understanding to model from first principles" then in the next sentence it is said "These models require closure relations based on information fromfirst principle calculations." This seems contradictory.

3.d Code Assessment needs improvement. This must be done for the frozen version of the evaluation model that has been submitted for approval. Assessments against versions will not be accepted. (Shouldn't the preliminary Acceptance Review be the place to catch this?) The second paragraph points to a problem but gives no clue how NRR will deal with it. The third paragraph needs further thought. All closure relations must be assessed over the full range of parameters encountered in the full scale plant as well as integral tests. If extrapolation is necessary or scaling distortions are encountered the impact on uncertainty must be evaluated (refer to CSAU). "Scaling analysis may be needed..." should be changed to "must be used". Also scaling should have been a basis of design of experiments. I think this document needs to tell the applicant what he is expected to provide. The applicant should have the responsibility to deal with the issue of compensating errors. The NRC reviewer will explicitly look for evidence that this has been done adequately. The letters NEA (next to last paragraph of section) are never defined. The open literature should also be consulted for relevant sources of assessment data.

3.f Independent Analysis Guidelines This doesn't give much guidance to the reviewer regarding audit calculations. Wouldn't it be better to simply say that independent audit calculations will be used as necessary by the reviewer to confirm the validity of applicant's assertions? The resources of the Office of Research will be consulted as needed to accomplish audits. I see no need to raise the question of whether TRAC or RELAP are suitable for audit calculations. The word Guidelines could be deleted from the title.

3.g Adequacy of Quality Assurance Plan, page 11. 10CFR50, App. B is very general and has no specific reference to quality assurance of computer codes. Is there another reference that could be added that cites this requirement more explicitly?

IV. EVALUATION FINDINGS , page 11 In first paragraph Safety Evaluation Report should be capitalized. In the 4th line right answer should be changed to acceptable answers. As in other sections, shoulds need to be changed to will in the case of actions that will be taken by the staff. T

V. REFERENCES , Page 11 and 12 The information is incomplete. Dates need to be included for all of them. Reference 1. is to itself. Reference 3 should include the series of peer reviewed in Nuclear Engineering and Design. Reference 4 should be omitted. In the last three NEA/CSNI should be further identified.

REGULATORY ANALYSIS

Following the SRP Chapter 15.0.1, I have a three page REGULATORY ANALYSIS. This document seems to be well considered. The only change that I would recommend is to reverse the order of SRP Chapter 15 and REG GUIDE -1096 in the concluding statement.

DRAFT REG GUIDE

Dr. Wallis has done a detailed critic of the draft REG GUIDE. I agree with his assessment. My only suggestion is that, since the REG GUIDE serves to amplify the SRP, the REG GUIDE final version should be reflective of changes in the SRP that may result from the current round of review.

MEMORANDUM

Date: April 6, 2000
To: G.B. Wallis, Chariman, Thermo-Hyraulic Subcommittee, ACRS
From: N. Zuber, ACRS Consultant
Subject: **The Effect of Deregulation on NRC's Capabilities in the Field of Thermo-Hydraulics (T-H)**

1. INTRODUCTION

1.1 Purpose

This unsolicited memorandum has a three-fold purpose:

- To summarize my assessment of the salient T-H issues brought about by deregulation, and to note their effects on NRC's mandate, which is to ensure public safety;
- To enumerate the present shortcomings and deficiencies in the field of T-H which, in my judgement, will prevent NRC from fulfilling its mission in the post-deregulation era (PDE;) and
- To identify activities and outline programs directed at meeting the needs and requirements generated by deregulation.

1.2 Motivation

This memorandum is prompted by my observations and assessments of technical activities carried out over the past decade by industry, by universities and by NRC staff. Several concerns have come to mind, including:

- The failure to appreciate the effects that deregulation will have on NRC's responsibilities and activities in the field of T-H;

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- The loss of technical information from experiments and analyses, both of which are needed by NRC to regulate the industry.
- The degradation of technical capabilities throughout industry and in NRC, which is often coupled with disingenuousness, as evidenced during technical meetings; and
- The lack of adequate planning to ensure that NRC will be able to acquire in a timely and cost-efficient manner the capabilities it will need in the post-deregulation era (PDE.)

To illustrate that in 1990 I had the same concerns (code documentation, technical capabilities and integrity, lack of planning, etc.) as those I am raising here, I am including as Attachment I the speech I gave that year, upon receiving the Technical Achievement Award of the ANS Thermal-Hydraulic Division.

The fact that ten years later I am compelled to write this memorandum addressing those same issues confirms that the concerns I expressed in 1990 were valid. It also confirms, unfortunately, that little has been done to resolve these issues during the past decade.

Attachment I reflects a rather hopeful, optimistic perception of the future on my part, in view of the deficiencies to be discussed in what follows.

It is clear to me today that if the process of technical degradation is allowed to continue, it will result in serious problems in the post-deregulation era which will have very detrimental effects on the technology.

This is an evolutionary certainty.

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1.3 Outline

Given that effective planning for the future requires a realistic assessment of the present, I begin this memorandum by summarizing my assessment of present T-H capabilities.

However, since any capability is generally preceded by a need, an assessment of the present requires an examination of what needs existed and how those needs were met.

Consequently, in what follows, I shall first consider the past as preliminary to assessing the present, and then address the future and its needs. This discussion will unfold in the next five sections, as follows:

2. THREE PERIODS OF T-H DEVELOPMENT

This section notes the effects that Emergency Core Cooling System (ECCS) hearings had on T-H technology, as well as the effects of recent deregulation that are still to come.

3. PRE-ECCS HEARING PERIOD

This section deals briefly with the initial T-H developments which ended with the ECCS hearings.

4. PRESENT T-H CAPABILITIES

This section

- Lists the requirements and demands imposed by the ECCS hearings;
- Discusses how the demands/requirements were met by the technical community under the leadership of the AEC and how these efforts

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were continued, until recently, by the NRC;

- Assesses present capabilities and deficiencies;
- Cites the most important lessons learned;
- Notes the effects of information loss and technical degradation;
- Lists my concerns.

5. POST-DEREGULATION ERA (PDE)

This section

- Notes the changes in market and technical environments and the new demands placed on T-H as a consequence;
- Lists the capabilities required by the PDE;
- Describes those factors which render present T-H capabilities inadequate for the PDE.

6. DEVELOPMENT PROGRAMS FOR PDE

This section identifies and outlines programs and activities which, if implemented and executed, will provide, in my opinion, the T-H capabilities needed for the PDE.

2. THREE PERIODS OF T-H DEVELOPMENT

The development and use of nuclear power (NP) can be divided into three periods which, in turn, are delineated by two events. The first is the ECCS hearings of 1973, and the second, the 1999 deregulation of the electric power industry. Each event, like a fault line, marks dramatic environmental changes (technical, public, market and financial.) The 1973 fault line was caused by the pressure of suddenly revealed inadequacies in the technology.

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4.7 Summary of Concerns and Recommendations

I shall now summarize my concerns and recommendations by grouping them under several headings:

- Documentation
- Complexity and BE codes
- Quantification of uncertainties
- Loss of information
- Capability degradation
- Conclusions

4.7.1 Documentation

Poor documentation has plagued the T-H technology for decades. That it continues to do so is evidenced by the RETRAN-3D review discussed in Section 4.5.1. With poor documentation and inexperienced staff replacements, the severity of this problem can only increase over time.

NRC does not have standards and criteria by which to measure adequate BE T-H code documentation. Evidently, NRC management does not see a need for them, as none are specified in the recent Regulatory Guide DG-1096 and Standard Review Plan (SRP.)

I must regrettably conclude that management learned nothing from the RETRAN-3D episode, offering further evidence of the autocatalytic degradation process described in Section 4.6.2.

It is my considered opinion that standards and criteria for accepting or rejecting code documentation must be clearly specified if a regulatory

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agency is to meet its responsibilities. I am confident that this judgement is shared as well by the technical community and the public.

To this end, I strongly recommend that these standards and criteria be developed and established by the NRC. Including specifics in the Regulatory Guide and SRP will require both time and thought. Still, the effort must be made if these documents are to serve any purpose.

4.7.2 Complexity of BE Codes

The greatest concern to any profession engaged in the resolution of T-H issues in NP technology should be the indiscriminate use of BE codes which invariably claim "good agreement" with experimental data. Yet, some of the closure relations and correlations in these codes are known to be inadequate, flawed and/or incorrect. The "good agreement" with experimental data can be explained only in terms of the carefully tuned dials in the code, as discussed in Section 4.2.2.

I have two concerns regarding the use of these BE codes in the PDE. First, with poor documentation and inexperienced code users, these codes could be applied to conditions for which they have not been assessed (a requirement discussed in Section 4.2.2.) This underscores the need for adequate documentation.

Second, for reasons which are also discussed in Section 4.2.2, BE codes are slow running, inflexible, maladaptive and inefficient. Consequently, they are ill suited to meet the standards for speed, flexibility, repetitive calculations and efficiency which will be required in the PDE.

For some time now I have been concerned with the lack of foresight and planning which characterize T-H activities of RES. For example, I drew

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attention to both deficiencies in my lengthy memorandum to Dr. Th. Kress ("RES T-H Research Program," April 16, 1998.) Indeed, Figure 6 in Attachment II was reproduced from that memorandum. Evidently, my words had no effect, since foresight and planning are still absent at the dawn of the deregulation era.

One would think that by this time RES would already have:

- Documented lessons learned over the past decade from BE code applications to NP, and translated them into principles to be used in planning and executing T-H activities for the PDE;
- Provided a synthesis of experimental data (acquired during the Mezzo era) for efficient retrieval and use in the PDE;
- Identified the needs and computational requirements of the PDE;
- Devised a program plan for meeting these requirements; and
- Submitted this program plan for review and comment by a peer group

To my knowledge, not one of these activities has been initiated, let alone accomplished. Consequently, NRC is poised to enter the PDE with computational tools inadequate for the mission.

To redress this deficiency I recommend that NRC initiate and execute the five activities listed above ~~be initiated~~.

4.7.3 Quantification of Uncertainties

Quantifying safety margins will be an activity of ever-increasing importance in the PDE. Therefore, a methodology dealing with this topic

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requires serious deliberation before it becomes imbedded in an RG and SRP. The critical nature of this requirement becomes evident when one considers the enormous difficulty of changing a regulation once it has been implemented.

Recognizing the importance of the problem, in 1987 the RES formed the TPG and gave them the mandate to develop and demonstrate such a methodology. After a year of intensive effort, the nine-man group developed the CSAU evaluation methodology discussed in Section 4.5.3. This methodology has also been referenced in the Regulatory Guide DG-1096 and the Standard Review Plan presented by the RES and NRR staff at the T-H Subcommittee meetings of November 17, 1999, and April 27, 2000.

Before addressing these documents, I would like to make three observations regarding the CSAU.

- First, each of the fourteen steps in the CSAU framework accounts for a need, and identifies the corresponding activity which must be addressed.
- Second, CSAU was subjected to review and comment of an international peer group, the composition of which is listed in Attachment III.
- Third, from the vantage point of some ten years later, my assessment of the CSAU methodology is as follows: The structure of the CSAU is adequate, but the methodology must be reinforced with more prescriptive statements, requirements and criteria for each of the steps (as discussed in Section 4.5.3.)

A decade after publishing the CSAU methodology (NUREG-CR 5249,

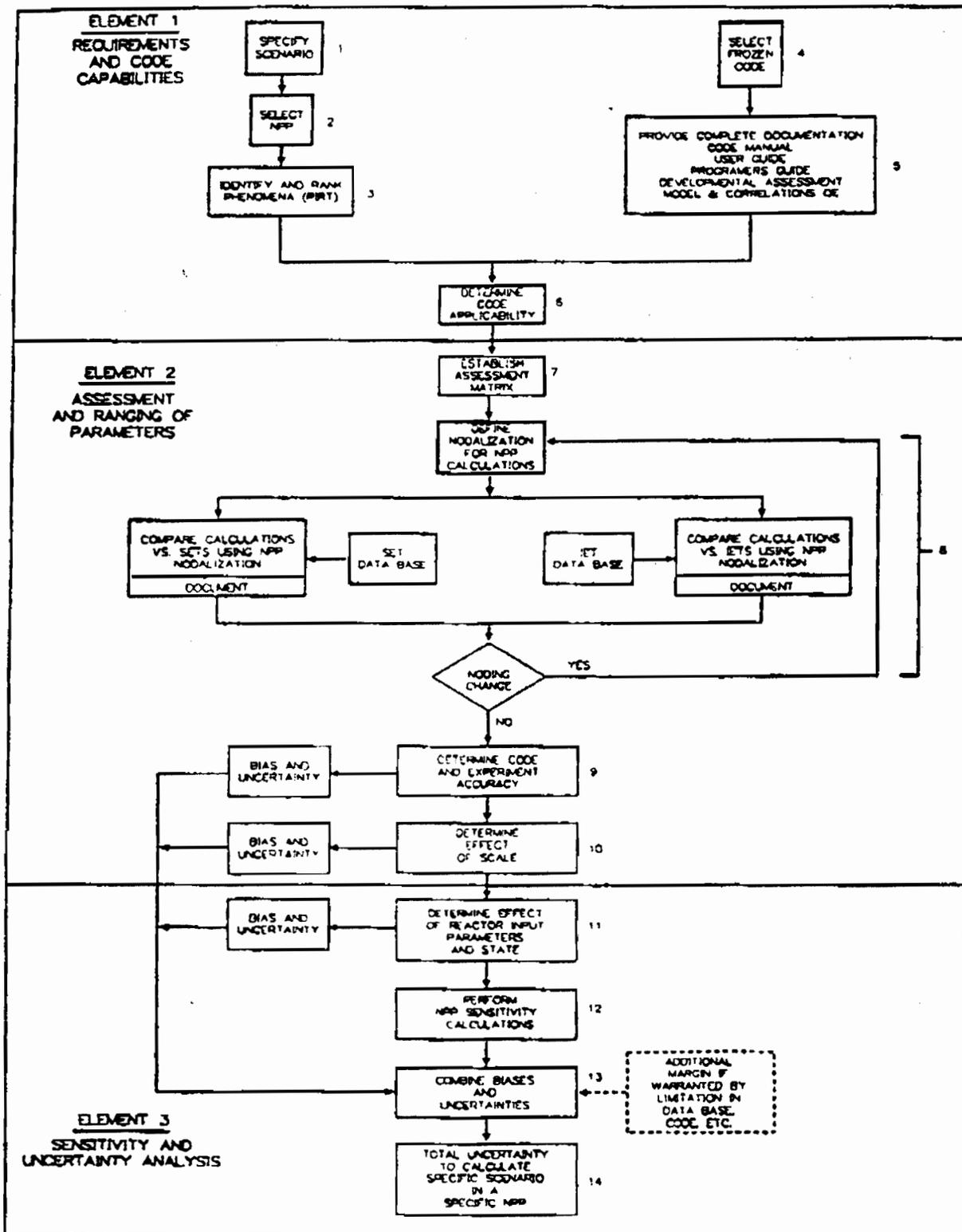
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October, 1989,) the RES and NRR staff prepared the RG-DG-1096 and SRP to deal with the same problem. Considering the passage of time and the importance of the subject to the PDE, I would have expected that before submitting these two documents for review by the T-H Subcommittee, the staff would have:

- Identified and documented the lessons learned from applying CSAU to NPP;
- Determined and documented those changes necessary to improve the methodology and thereby the regulatory process;
- Identified the computational requirements and needs of the PDE;
- Prepared an RG and SRP which include information generated by the above efforts;
- Submitted the RG and SRP to a peer group for comment and review;
- Prepared a revised version (if needed) of the RG and SRP which includes the comments and/or recommendations of the peer group.

To my knowledge, none of these steps were undertaken.

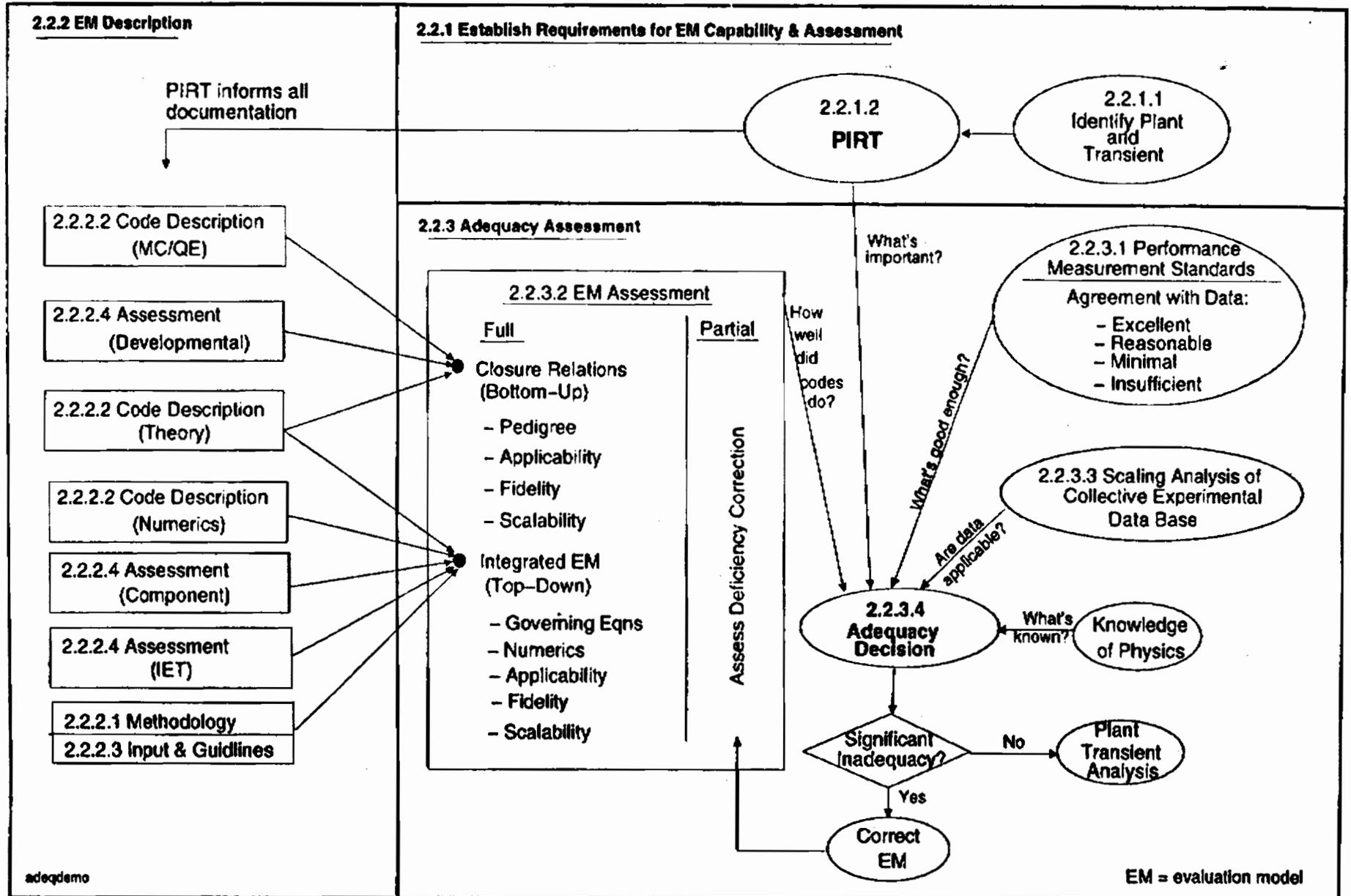
The RG and SRP documents we reviewed and discussed at the T-H Subcommittee meetings refer to CSAU, but in fact, bear little or no resemblance to it. For example, Figure 1 in Attachment III and Figure I in Attachment IV are the flow and activity charts – the first for CSAU, and the second for the RG-DG-1096. It can be seen that the structure and “road map” of CSAU are well defined, simple and easy to follow by the applicant and regulator. The opposite is true of Figure I of the RG. It is far too convoluted to serve as any sort of road map.



NSL01059

Figure 1. Code scaling, applicability and uncertainty (CSAU) evaluation methodology.

Figure 1. Adequacy Demonstration Process



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However, the most serious deficiency or flaw of the RG structure is the omission of steps which address the pivotal problems of code assessment and uncertainty calculations.

Consider first the code assessment. One of the most significant conclusions drawn by the TPG was the imperative to perform assessment and plant calculations using identical nodalization. It is for this specific reason that nodalization is highlighted in Step 8 of CSAU. You will note that nodalization does not appear at all in Figure 1 of the RG.

Next, consider uncertainties. You will note that CSAU identifies and deals with three uncertainties, independent of each other. They are highlighted in Steps 9, 10 and 11. Step 9 accounts for uncertainties from code assessment calculation, Step 10 accounts for the effects of scale distortion, and Step 11 considers uncertainties associated with reactor parameters. Again, you can see that Figure 1 of the RG-DG-1096 shows no activity associated with uncertainty. Indeed, the word "uncertainty" does not appear anywhere in that figure.

In view of the forgoing, I fail to comprehend how Figure 1 of the RG could be titled "Adequacy Demonstration Process." To my way of thinking, this figure demonstrates only technical incompetence, absence of vision and lack of planning on the part of management. It also represents ten wasted years, during which the CSAU methodology could have been tested and improved. Had this been done, NRC could have entered the PDE armed with a robust methodology. As it is, NRC has an RG and SRP which are frivolous at best, and are vulnerable to abuse by unscrupulous persons or misuse by inexperienced ones.

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I could continue to cite additional deficiencies such as:

- Uneven presentation in the RG, such that PIRT is discussed at great length while important topics such as the effect of compensating errors is not addressed;
- Lack of integration of activities cited in the RG with those in the SRP. A structure is needed within which both documents and sets of activities should be accommodated; etc.

It is clear from the superficial nature of both documents that both were hastily prepared and poorly coordinated.

The fact that the RG-DG-1096 and the SRP must have been reviewed and approved by two division managers (one from RES and the other from NRR) prior to being brought to the attention of the T-H Subcommittee is yet another indication and manifestation of the continuing autocatalytic degradation process discussed in Section 4.6.2.

Given that the RG and SRP will be the most important T-H documents in the PDE, they must not be generated or accepted without great care and deliberation. Nor can they be considered separately, since these two documents address the same topic, differing only in the details of the information content. To redress the frivolity and superficiality of the RG and SRP, I strongly recommend that NRC initiate and execute the six activities outlined on page 33 above.

In Section 4.5.3 I summarized the lessons learned from observing the T-H development (including the CSAU evaluation methodology) over the

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past decade as follows:

In the absence of specific criteria and prescriptive requirements, the door is left open to technical incompetence and/or laxity, and/or pecuniary motives, any of which will seriously undermine the regulatory decision making process.

It is for this reason that the RG and SRP will require a logical, well structured framework, which provides specific criteria and prescriptive requirements.

4.7.4 Loss of Information

Inasmuch as the efficiency of any organization is determined by how it processes information, any loss (whether in terms of material or personnel) can have a serious impact. This is precisely why I addressed this issue at some length in Section 4.6.

Here, I would like to reemphasize the need to preserve information and to recommend, therefore, that the four activities listed in Section 4.6.1 be implemented and executed by NRC.

4.7.5 Capability Degradation

The effect of the human factor in degrading the capabilities of an organization was discussed in some detail in Section 4.6.2. The T-H Subcommittee reviews of RETRAN-3D and of RG and SRP reflected a lack of foresight and planning, a failure to heed the lessons learned from past experience, and the absence of technical /managerial ability. ~~All of these~~

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These omissions all signify that the autocatalytic degradation process is at work.

The meetings revealed an organizational mindset (culture) and myopia which will have serious detrimental effects in the PDE if not addressed properly and promptly. Change at the organizational level is never easy, but it must be accomplished if NRC is to fulfill its responsibilities. (For reasons discussed in Section 4.6.2)

To quote Nitzsche: *Nietzsche*

"Against ignorance, the gods themselves struggle in vain."

I could paraphrase that here by saying:

Against the mindset of an entrenched bureaucracy, the best intentions and advice are in vain.

I hope, in this instance, that this is not the case.

4.7.6 Conclusions

From the foregoing, I draw the conclusion that the NRC is entering the deregulation era without having:

- A synthesis of the T-H experimental data acquired during the past two decades;
- T-H computational capabilities required for the PDE; and
- A technically sound methodology quantifying reactor safety margins, which could be defended successfully in any public and/or technical arena.

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Consequently, in the PDE, NRC will lack the T-H tools required to meet its twofold responsibility: one to the public and the other to the industry.

For the public, NRC's regulations must ensure safety, while being clear, technically sound, defensible, able to withstand audit, and therefore, acceptable.

For the industry, NRC's regulations must be technically sound and rational, implementable and last but not least, supported by efficient regulatory procedure.

The heavy price of entering the PDE without adequate preparation will be paid by one or both audiences. This MUST be avoided.

For my part, I state in closing that I am willing to present (and debate) the content and conclusions of this memorandum to a peer group and/or technical community and/or public forum for review and comment.

DRAFT REGULATORY GUIDE DG-1096
-
**TRANSIENT AND ACCIDENT ANALYSIS METHODS
FOR CHAPTER 15 EVENTS**

**Advisory Committee on Reactor Safeguards
May 11, 2000**

**G. Norman Lauben
Safety Margins and Systems Analysis Branch, RES**

acrs0500.01

PURPOSE

Present the background and content of DG-1096, a regulatory guide for transient and accident methods used to analyze events required in 10 CFR 50.34 and defined in SRP chapter 15.

OUTLINE

- 1. Background and Need**
- 2. Contents of DG-1096**
- 3. Graham Wallis comment disposition**
- 4. Status and Summary**

BACKGROUND AND NEED

- **The Maine Yankee Independent Safety Assessment Team (ISAT) identified the need for NRC to provide guidance on transients and accident methods to:**
 1. **Ensure sufficiency and consistency in the level of documentation and validation, and**
 2. **Have a documented process in place to identify and rank key phenomena for relevant events, which is then used in the code development and assessment process.**
- **To implement this, the NRR Maine Yankee Lessons Learned Task Group recommended development of:**
 1. **A standard review plan section for code review, and**
 2. **A regulatory guide for code development and assessment.**
- **Since the items identified by the ISAT do not, by themselves, constitute all needed parts for a description of transient and accident analysis methods, additional items, such as determination of basic code capability are being added to DG-1096.**

BACKGROUND AND NEED (CONTINUED)

- **Plans and status of this guide (DG-1096) and the companion Standard Review Plan (SRP) sub-chapter (Chapter 15.01) have been discussed with the T/H Subcommittee on three occasions.**
- **Three drafts of this guide have been provided to the ACRS for their review and comment.**
- **The most recent draft, discussed with the sub-committee on 4/27/00, considered informal verbal comments from a previous sub-committee meeting on 11/17/99.**
- **Provisional draft written comments from Graham Wallis on DG-1096 were received on 4/25/00 and will be briefly addressed today.**

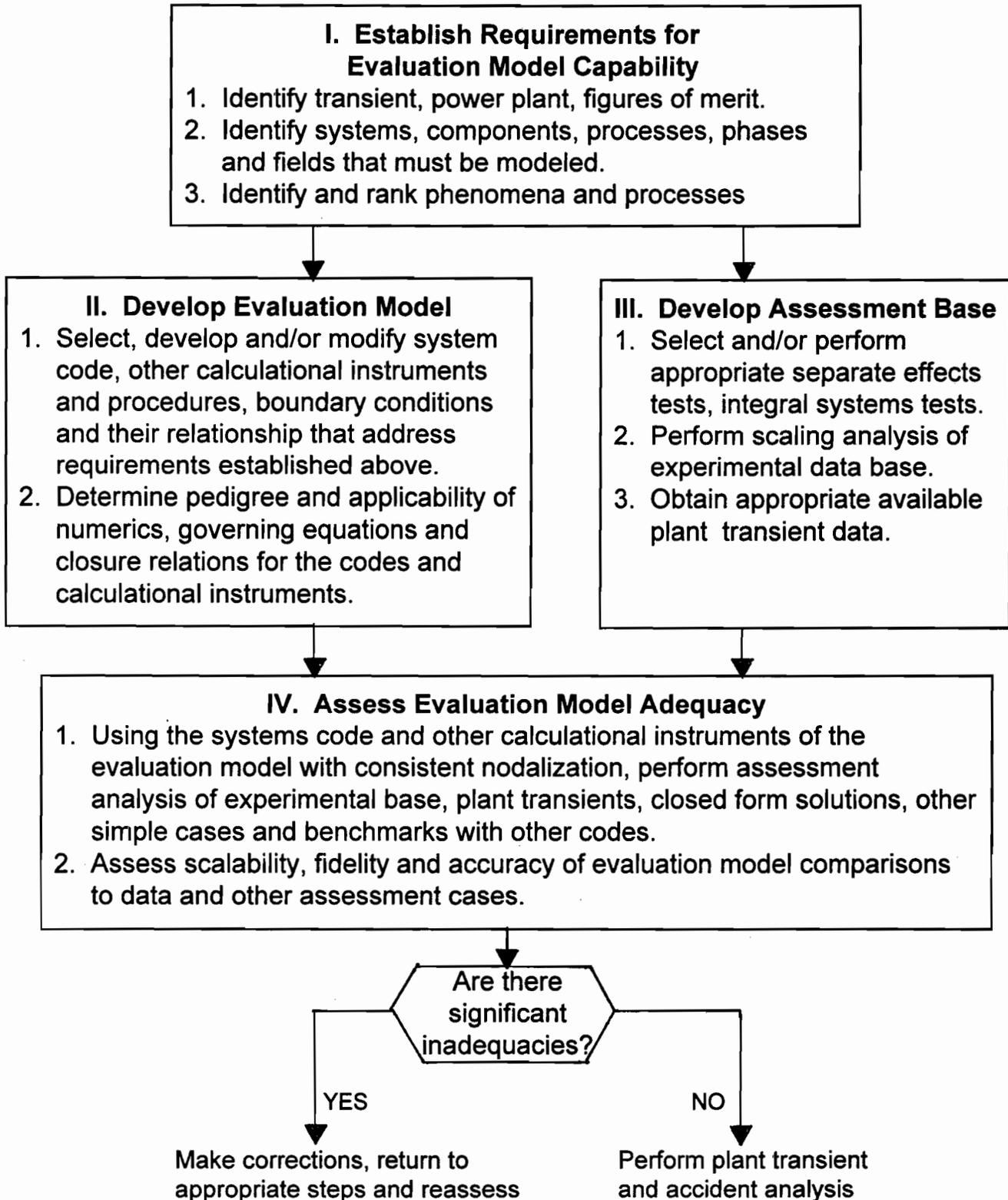
DG-1096 CONTENTS

- **In December 1998 the following proposals were made to the ACRS T/H subcommittee regarding the reg. guide:**
 1. **Address analysis methods for all Chapter 15 events on a generic basis stressing verification, validation, documentation, and quality assurance.**
 2. **Describe application of the evaluation model concept which includes all computer programs, analysis methods not included in the computer programs, and other information used to show compliance with analyses required by 10CFR50.34.**
 3. **Describe an acceptable evaluation model development and assessment process based on Code Scaling, Applicability, and Uncertainty (CSAU) principles refined over the last dozen years.**
- **The proposed content was incorporated into DG-1096.**
- **The evaluation model development process is currently being updated to include development methods based on the heirarchical system decomposition principles, largely inspired by the Severe Accident Scaling Methodology (SASM).**

PRINCIPLES OF EVALUATION MODEL DEVELOPMENT AND ASSESSMENT

- 1. Determine requirements for the evaluation model and the importance of key systems, components, processes and phenomena. A process like the hierarchacal system decomposition should be used to assure that all levels of evaluation model development are properly considered.**
- 2. Develop an evaluation model that meets the requirements.**
- 3. Develop an assessment base appropriate to the requirements and the evaluation model. (SA of CSAU)**
- 4. Assess the adequacy of the evaluation model in light of analytical and experimental uncertainties. (U of CSAU)**
- 5. Establish and follow an appropriate quality assurance protocol during the evaluation model development and assessment process.**
- 6. Provide comprehensive, accurate, up-to-date documentation.**

EVALUATION MODEL DEVELOPMENT AND ASSESSMENT PROCESS



SUMMARY DISPOSITION OF GRAHAM WALLIS COMMENTS

- 31 general and specific written comments were received on 4/25/00.
- 12 of those comments had to do with structure of the guide, improper balance, lack of a clear “roadmap” for following the guide, need for more specific guidance, and lack of focus beginning with overall code structure based on fundamental equations.

We agree that this should be improved and it is being addressed in DG-1096. However, care is needed to avoid unneeded specificity which could inhibit creativity, and result in unintended backfit.

- 16 comments appear to be readily accommodated.

These will be addressed in DG-1096.

- 3 comments we don't believe will result in changes to the guide.

Those comments are addressed on the next slide.

G. WALLIS COMMENTS - NO CHANGES ENVISIONED

- 1. Add more specificity about when peer review should be done.**

We do not believe that this degree of specificity is consistent with RES Office Letter 3A on Regulatory Guide Development.

- 2. Effect of changing regulations on DG-1096.**

Regulations change slowly. Any changes that we can envision relative to the requirements in 50.34 would probably have a bigger effect on SRP Chapter 15 transient definition and standards than on DG-1096.

- 3. Implementation section too short; needs roadmap.**

The content of this section is consistent with RES OL 3A and other recent regulatory guides.

STATUS AND SUMMARY

- **DG-1096 on transient and accident analysis methods addresses the findings of the Maine Yankee panels and other review groups.**
- **Timely inclusion of current ACRS comments is the next step in the process of eventually releasing DG-1096 and SRP sub-chapter 15.01 for public comment.**
- **After incorporation of ACRS comments, DG-1096, SRP sub-chapter 15.01, and the regulatory analysis will be sent to OGC for concurrence and then to CRGR for review.**
- **After appropriate OGC and CRGR consent, the documents will be released for public comment.**



*United States
Nuclear Regulatory Commission*

Risk-Informed Regulation - Implementation Plan

ACRS Full Committee

May 12, 2000

T. King, RES (415-5790)

M. Cunningham, RES (415-6189)

Purpose of Briefing

- Describe Risk-Informed Regulation Implementation Plan (RIR-IP):
 - background
 - purpose/objectives
 - outline/structure
 - plans for completion
- No ACRS letter requested at this time

- PRA Implementation Plan:
 - started in 1995
 - catalog by office of ongoing activities
 - updated semi-annually

- March 1999 GAO Report:
 - agency needs a strategy for RIR
 - roadmap of where to go/how to get there

- June 1999 Chairman response

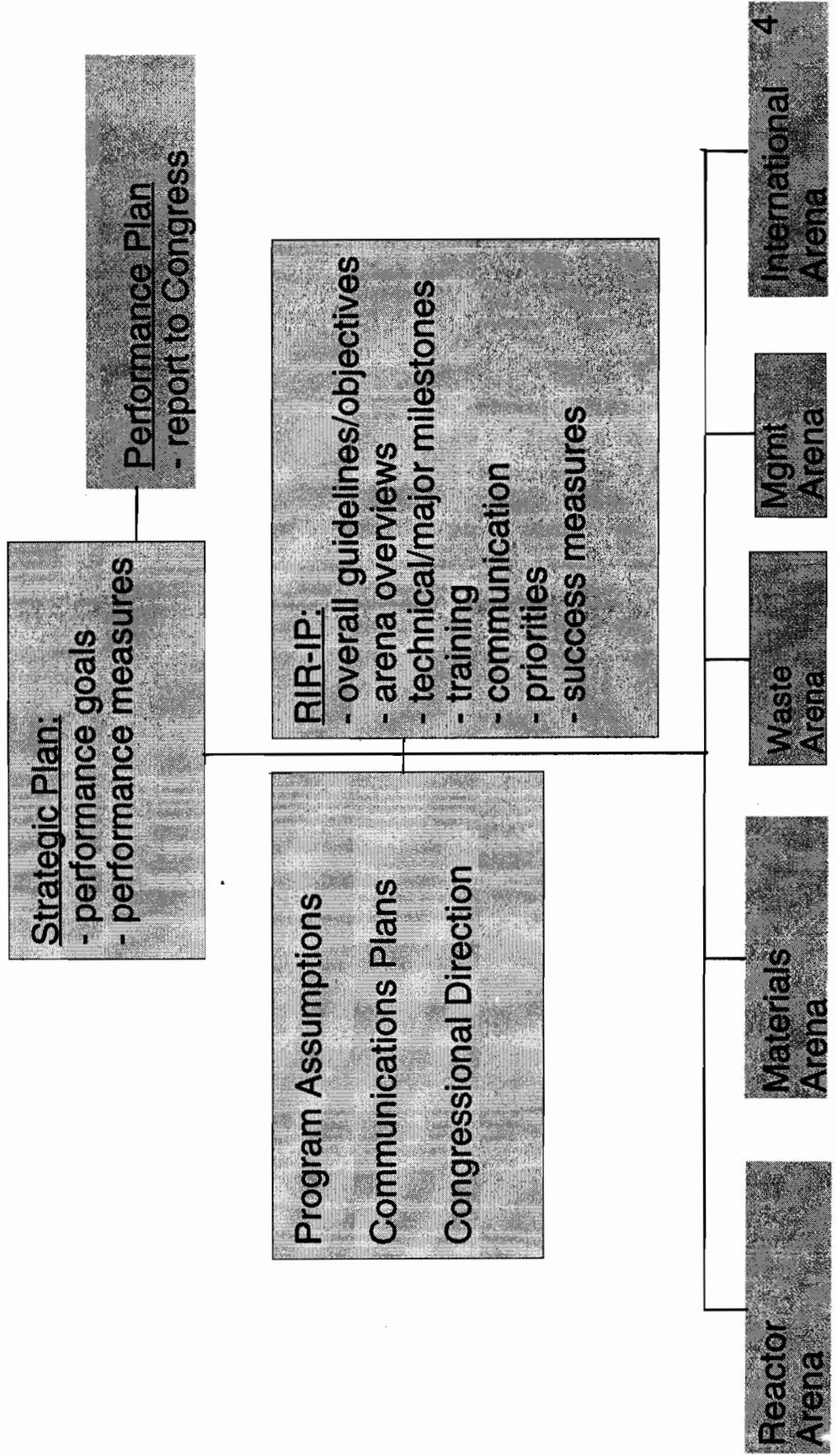
- Jan. 2000 Outline

- SECY-00-0062

RIR-IP Purpose and Objectives

- To provide a comprehensive and integrated plan for the Agency's risk-informed activities:
 - what should be risk-informed?
 - what is needed to accomplish risk-informing?
 - what is the schedule?
- Includes:
 - guidelines for selection of activities to be risk-informed
 - guidelines for RIR (e.g., principles)
 - identification of major milestones and infrastructure needs (e.g., goals, data, tools, guidance)
 - training plans
 - communication plans
- Covers reactors, materials and waste.

FRAMEWORK



Guidelines for Selection

- Contribution to Agency Performance Goals:
 - maintain safety
 - increase public confidence
 - improve effectiveness, efficiency, realism
 - reduce unnecessary burden

- Other factors:
 - sufficient information and analytical tools exist or can be developed to support risk-informing

 - licensee interest

 - reasonable cost

RIR-IP Outline

- Executive Summary:
 - quick look tables

- Introduction:
 - purpose/objectives
 - relation to Strategic Plan, Performance Plan (some performance measures are based on the RIR-IP), Operating Plans, PBPM process
 - overall guidelines with respect to selection, prioritization, communication, implementation (e.g., performance-based)

- Arena Sections:
 - reactor
 - materials
 - waste

Outline & Structure for Each Arena

Introduction:

- guidelines applied in selecting and prioritizing activities to be risk-informed
- list of activities and priority for risk-informing
- activities are defined at high level (e.g., 10 CFR 50, RROP, security, etc.)
- list of activities not selected for risk-informing

For Each Activity to be Risk-Informed

- status
- major milestones
- infrastructure needs:
 - data
 - tools
 - guidance documents
- responsibilities

Arena and Activity Training Needs

- who
- what
- when

Arena and Activity Communications Plan

- who
- what
- when

Success Measures

**Presentation Before the
Advisory Committee on Reactor Safeguards**

Hatch Unit 1 Scram with Complications (AIT)

**May 12, 2000
10:15 a.m. EST**

Presenters

Introduction:

**Tad Marsh, Chief
Events Assessment Branch
NRR**

Augmented Inspection Team Leader:

**Leonard Wert
Region II
(404)562-4540**

Event Assessment:

**Vern Hodge
NRR
(301)415-1861**

HATCH UNIT 1

SCRAM WITH COMPLICATIONS

JANUARY 26, 2000

AIT Team Leader: Leonard Wert, DRP Branch Chief, Region II

AIT Members:

J. Munday, Senior Resident Inspector, Hatch

G. Hammer, Mechanical Engineer, NRR

T. Fredette, Resident Inspector, Hatch

J. Starefos, Resident Inspector, Browns Ferry

W. Bearden, Reactor Engineer, DRS

NRC Inspection Report 50-321, 366/00-01, February 28, 2000

- I. OVERALL EVENT SEQUENCE
- II. EQUIPMENT ISSUES
- III PERFORMANCE OF LICENSED OPERATORS
- IV. HEALTH AND SAFETY ASSESSMENT
- V. NRC ACTIONS

OVERALL EVENT SEQUENCE

A feedwater (FW) heater inlet isolation valve closed when a control switch unexpectedly actuated. An automatic scram on low reactor water level resulted.

High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) initiated. Reactor vessel water level was rapidly recovered.

HPCI tripped about 67 seconds after the reactor vessel high level trip setpoint was reached. Reactor vessel water level was high enough to cause water to enter the main steam lines.

The operators closed the Main Steam Isolation Valves in accordance with the Emergency Operating Procedures.

On the operator's initial attempts to control pressure with the Safety Relief Valves (SRVs), the expected control panel indications were not received.

After the control switches for several other SRVs were manipulated, an "open" indication was received and the SRVs were then used to control reactor pressure.

Reactor pressure peaked slightly above normal operating pressure.

After the incident, licensee determined that the SRVs had actually opened when actuated. SRV tailpipe (discharge line) temperatures clearly showed that the valves had opened.

Operators subsequently used HPCI and RCIC for inventory control. Several early attempts to restart RCIC did not succeed but RCIC was successfully used later in event.

HPCI was manually operated several times and tripped properly at its high level setpoint on two occasions.

EQUIPMENT ISSUES:

SAFETY RELIEF VALVES

While the SRVs were passing water or a steam/water mixture, the pressure in the SRV discharge line did not get high enough to actuate the pressure switch. Alternative open SRV indication (tailpipe temperatures) was available but not used.

Five of the pilot actuated Target-Rock SRV assemblies were later satisfactorily setpoint tested. One pilot valve assembly was inspected. No unexpected conditions were identified.

Subsequent GE and Target-Rock analyses supported operability of SRVs, the discharge lines, and components in the discharge lines (vacuum breakers and pressure switches).

REACTOR CORE ISOLATION COOLING

Hatch's procedure for RCIC restart left the RCIC steam admission valve fully open. Under some plant conditions, such as water in the steam supply line, the RCIC turbine can overspeed if this restart procedure is used.

Simulator training did not accurately reflect RCIC performance.

Licensee promptly revised RCIC procedures.

HIGH PRESSURE COOLANT INJECTION

The high reactor water level most likely resulted from HPCI not tripping immediately when the high level setpoint was reached. Additional factors contributed to the high water level.

Operators should have manually tripped HPCI when it was indicated that HPCI did not automatically trip.

Licensee did not conclusively determine why HPCI did not immediately trip during initial operation. Subsequent extensive testing supported operability of the trip function.

FEEDWATER VALVE CONTROL SWITCH

Licensee determined that a GE type CR 2940 control switch failure caused the feedwater heater valve to close unexpectedly.

GE Service Information Letter (SIL) 217, issued in 1977, states that the switch contacts may close prematurely from slight movement of the selector switch. SIL recommended that the switches be replaced with a less sensitive model.

Two of these switches had failed at Hatch in 1996 in non-safety related applications. After this event, licensee developed list of affected switches, including safety-related applications, prioritized them, and replaced some.

MAIN STEAM LINE INSTRUMENTATION:

The licensee assessed the potential effects of the transient such as localized flashing or water hammer on the instrumentation connected to the main steam lines.

Testing identified that four pressure transmitters were affected by the transient, two were significantly damaged. Two of the transmitters were involved in a failure of RCIC to automatically isolate during the subsequent plant cooldown.

The affected transmitters were replaced prior to startup.

PERFORMANCE OF LICENSED OPERATORS

- Event occurred during shift change. Shift supervisors (SS) had already turned over, but reactor operators were in the process of changing over. SRO was outside the “at the controls area” when event initiated.
- The operators did not properly monitor reactor vessel water level and injection system operations.
- STA did not provide timely assistance to operators when unexpected SRV indications were observed. Training sessions had described the availability of the tailpipe temperature as an indication of SRV performance.

- Operator took manual control of FW controller, this affected the controller response to the feedwater transient.
- RCIC restart guidance and simulator training were not adequate for conditions of the event.

Licensee promptly completed several corrective actions, including revision to the turnover process. Licensee also initiated broader corrective actions to address operations performance issues.

HEALTH AND SAFETY ASSESSMENT

No adverse affect on public health and safety. No radiological release, no approach to operational safety limits. Safety-related systems remained operable, although some problems with important equipment were experienced.

NRC ACTIONS

Region II dispatched inspectors to site and initiated Special Team Inspection on January 26, 2000.

AIT was dispatched to site January 30 - February 4, 2000. The exit was attended by several members of the public.

Staff contacted the BWROG, discussed the event with INPO during its weekly call, and responded by telephone to informal UCS inquiry about the event.

Region II continues to monitor the licensee's implementation of corrective actions through baseline inspection activities. On May 17, 2000, licensee will discuss corrective actions with Region II management in a meeting.

AIT identified candidate generic issues and promptly initiated Information Notice 2000-01 (issued February 11, 2000) highlighting three issues:

- SRV operation is slowed and indication depending on tailpipe pressure is affected when the valve is passing water instead of steam.
- Procedural guidance for MSIV closure and setpoints for high-level trips of injection systems may not prevent complications due to water collecting in main steam lines.
- RCIC performance is affected by resetting turbine trip-and-throttle valve with steam admission valve open and flow demand present, especially with excessive moisture in the turbine steam supply line.

A Memorandum was written on April 14, 2000 from Region II DRP Division Director to Chief, Events Assessment, Generic Communications, and Non-Power Reactors Branch, NRR requesting review of two issues, including interaction with the BWR Owners Group and GE as appropriate:

- To what degree should water be allowed to enter the MS lines at BWRs? Should universal guidance be developed for BWRs with specific criteria directing when the MSIVs should be closed?
- What is the significance and specific impact of the water in the main steam lines relative to considerations in the design and licensing basis?

NRR Safety Assessment and Followup

- Conducted Operational Events Briefing February 29, 2000
- The NRR Probabilistic Safety Assessment Branch performed a preliminary probabilistic risk analysis for this event, using the revised simplified plant analysis risk model for Hatch (rev. 2_qa). Application of this model to this event was accomplished using several assumptions.
 - Dominant sequences include losing the condenser as a heat sink, failing to provide adequate high pressure coolant makeup, and failing to depressurize the reactor to allow low pressure makeup.

- Probability for losing condenser heat sink is modeled by taking little credit for recovering power conversion system for short recovery times.
- If HPCI fails, recovery is assumed to be performed in the plant, not in the control room. The RCIC system was modeled as failed and not recoverable for short recovery time sequences. Given simultaneous HPCI and RCIC failures, no credit is taken for control rod drive pump injection.
- Probability for operator failure is increased slightly to account for the AIT finding that overcrowded conditions in the control room prevented clear lines of responsibility.

- With these assumptions, the calculated conditional core damage probability is $1.6E-5$.
- This event is being considered as a significant event because of several complicating factors:
 - water filling the main steam lines to the main steam isolation valves
 - loss of the condenser heat sink on manual closure of the main steam isolation valves
 - inadequate indication of safety relief valve operation
 - faulty operation of two steam-driven injection systems
 - unclear lines of responsibility in the control room
 - excessive sensitivity to mechanical motion of the feedwater control switch

ACRS MEETING HANDOUT

Meeting No. 472ND	Agenda Item 12	Handout No.: 12.1
Title: Physical Security Requirement for Power Reactors		
Authors: Nuclear Control Institute		
<p>List of Documents Attached</p> <p>Paper by Edwin Lyman, Nuclear Control Institute, "The Status of Reactor Safeguards Initiatives - Background: The OSRE Program and Public Confidence," revised May 9, 2000.</p>		12
<p>Instructions to Preparer</p> <ol style="list-style-type: none"> 1. Paginate Attachments 2. Punch holes 3. Place Copy in file box 	<p>From Staff Person</p> <p>N. Dudley</p>	



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THE STATUS OF REACTOR SAFEGUARDS INITIATIVES

Edwin S. Lyman
Scientific Director
Nuclear Control Institute

Based on a presentation to the NRC Regulatory Information Conference
March 29, 2000, Washington, DC
Revised May 9, 2000

BACKGROUND: THE OSRE PROGRAM AND PUBLIC CONFIDENCE

- U.S. Government authorities have identified an increasing threat of domestic terrorism, including use of weapons of mass destruction, as one of the most important security issues facing Americans today.
- Radiological terrorism is one component of this threat that should not be underestimated.
- Maintaining public confidence in the safeguards area is especially important because the public cannot independently verify whether the existing provisions to protect against radiological sabotage are adequate, due to security concerns.
- The OSRE (Operational Safeguards Response Evaluation) Program has been highly successful in identifying significant physical protection vulnerabilities at U.S. nuclear power plants --- as of summer 1998, 40 instances in which mock adversaries were able to defeat an entire target set occurred, demonstrating the potential for terrorists to cause "significant core damage" at nearly half the plants tested. A similar percentage of failures have occurred among OSREs conducted after that date as well. "Significant vulnerabilities" continue to be identified.
- Many licensees failed their OSRE evaluations despite the fact that they were substantially in compliance with 10 CFR 73.55 (b)-(h), had many months of advance warning and had increased the sizes of their security forces by an average of 80% over the numbers they had committed to in their security plans.
- OSRE is the very model of the type of "performance-based" program that NRC is seeking to introduce in other areas, as it has demonstrated that simple compliance

Strategies for stopping the spread and reversing the growth of nuclear arms.

Paul L. Leventhal, *President*, Peter A. Bradford, David Cohen, Julian Koenig, Sharon Lanzer, Roger Richter, Dr. Theodore B. Taylor
BOARD OF DIRECTORS

In defense of the Part 100 approach, NEI has argued that the "significant core damage" criterion was too conservative, because it did not take into account operational responses and engineered features that could mitigate the consequences of an attack, even if an entire target set were defeated. NEI has also stressed that it seeks to bring the security regulations into conformity with other safety regulations, in effect treating sabotage as if it were a design-basis accident. But is this position reasonable?

The Part 100 proposal fails the "public confidence" test in a number of ways and typifies how out of touch with the public the industry has become. First, it is hard to believe that the public would accept the inability of a plant security force to prevent terrorists from blowing up multiple pieces of vital equipment and causing a partial core meltdown, even if the off-site releases were minimal. To appreciate this point, one need only look at the public response to the recent Indian Point 2 steam generator tube rupture, which did not result in a measurable release of radiation.

To provide another perspective, the criticality accident at Tokaimura in Japan last year did not cause radiation doses in excess of Part 100 limits, yet it caused an uproar in Japan and around the world that has not yet subsided.

Simply put, it is foolish to weaken physical protection standards so that saboteurs would have the opportunity to cause significant core damage, because the uncertainties associated with efforts to bring the plant to a safe condition are much greater than if access of intruders is effectively denied and there is no challenge to vital equipment. NEI's proposal would have made it impossible to provide a credible estimate of the risk to the public from acts of radiological sabotage.

Also, it is not appropriate to treat an act of sabotage as if it were simply a type of design-basis accident. Willful acts of sabotage are fundamentally different from spontaneous failures of pieces of equipment. In particular, while the probability of multiple simultaneous equipment failures is typically much lower than that of a single failure, this is not the case in the event of sabotage, since a saboteur would be likely to attempt to cause multiple failures (in the most damaging combinations). In this regard, we do not believe that it is appropriate to "risk-inform" physical protection regulations. Substantial margin must be maintained to accommodate the great uncertainties in the nature and extent of the threat.

In fact, a more appropriate way to harmonize security with safety regulations would be to treat a security breach as an external event, such as a fire or earthquake. Accordingly, in SECY-00-0063, NRC staff have proposed --- and the Commission has accepted --- an alternative approach which is closer to the spirit of the OSRE standard. In this approach, which is similar to Part 50, Appendix R on fire protection, performance criteria would be tied not to permissible radiological releases, but to protection of vital equipment in order to achieve safe (hot) shutdown and maintain core cooling. This is essentially equivalent to the requirement of prevention of significant core damage.

One can argue that this approach does not go far enough. For instance, Appendix R does not require that safety systems for mitigating design basis accidents be protected, since they do not have a direct impact on safety. However, an attack that takes out systems necessary for the mitigation of design basis accidents will significantly increase the short-term accident risk and present additional vulnerabilities. Although the public may not be directly impacted, this situation clearly should not be considered a success of the physical protection system.

Despite NRC's apparent endorsement of the "no significant core damage" criterion, it is not clear that NEI has abandoned its quest to utilize a weaker standard, and there may be other opportunities within the rulemaking process to effectively do so. NEI has reintroduced the notion of preventing off-site releases in excess of "design criteria" in the latest version of its security self-assessment plan, ostensibly to cover attacks on the spent fuel pool or other potential targets not linked to core damage. However, there should be other approaches to treat these sources consistently short of returning to a Part 100-based criterion.

2. Credit for operator response and engineered safeguards.

Although the Part 100 criterion may no longer be viable, the notion that credit may be given for operator response is still on the table. NEI maintains that even if an entire target set is defeated by a sabotage attack, operators and safety systems will be able to act quickly enough prevent a severe accident with containment failure or bypass from occurring. However, there is no evidence that operators have the necessary training to respond appropriately to the complex set of events that could occur during an attack. Defeat of an entire target set typically corresponds to a "beyond-design-basis" accident, which may be beyond the capability of operators or mitigation systems to effectively control. Moreover, operators may not be willing or able to take actions that require leaving the control room or other secured areas to operate auxiliary controls during a security event.

If NRC is prepared to consider allowing credit to be given to operator intervention during exercises, at a minimum the use of simulators to test operator response should be required. No credit should be given for any operational response unless the licensee can demonstrate in a credible fashion that such a response is achievable, given the highly confusing state of the plant during the attack and the small window of time in between defeat of a target set and core uncovering. NEI's argument that no such demonstrations are necessary because plant operators are capable of dealing with such accidents through the implementation of Severe Accident Management Guidelines (SAMGs) is not sufficient to alleviate this concern. As a recent NUREG report notes, there is no credible human reliability accident analysis built on SAMGs, which are not procedures, but guidelines that require subjective assessments by the operators.²

Some in the industry have objected to use of simulators, on the basis that existing units cannot be programmed to handle such events. However, this argument only

² M. Pilch *et al.*, *Assessment of the DCH Issue for Plants with Ice Condenser Containments*, NUREG/CR-6427 (Washington, D.C.: U.S. NRC, 2000), 52.

underscores the need for credible means of demonstrating capability under extreme conditions.

Also, if credit is to be given to operator actions, then it is essential to comprehensively evaluate the threat posed by active insiders, who could have access to the control room or place it under siege. An insider holding control room operators at bay with firearms for the duration of the attack, intentionally disabling safety systems or tampering with instrumentation and control systems could neutralize the ability of operators to bring the plant to a safe condition. Scenarios must be considered in which the operators themselves are targets.

Another troubling aspect of NEI's proposal to consider operator actions is that it will greatly increase the complexity of plant security response evaluations. Former NRC Chairman Jackson observed during a May 5, 1999 hearing that extensive PRA-type analysis would be necessary to determine the probability of successful mitigation of sabotage events. The uncertainties inherent in PRA analysis are themselves significant -- the uncertainties that would plague an attempt to extend PRA analysis to include deliberate acts of sabotage would be even greater. NEI's proposal would therefore introduce a large degree of subjectivity into the evaluation of security response, providing a great deal of leeway to downplay poor performance of the security organization. This will complicate the job of inspectors, who need simple and well-defined criteria to judge licensees' performance during exercises.

3. Design-basis threat.

In addition to not testing for an active insider, there are a number of other characteristics of the DBT which have not been utilized (the actual details are not publicly available). Clearly, licensees must be able to demonstrate that they can protect against the full DBT. We understand that a new Adversary Characteristics Document (ACD) has been issued that updates the DBT and may remove non-conservative assumptions. However, we are troubled that NRC has solicited feedback from NEI on the ACD and appears willing to consider making changes in the document in response to its comments, despite earlier statements by NRC staff that the ACD was "a finished document" not subject to industry comment. NEI does not have access to intelligence that would qualify it to challenge any aspect of the ACD. Moreover, the financial impact of the ACD on licensees has no bearing on the content of the document itself.

4. Licensee Self-Assessment Program.

We do not believe that the licensees' past performance has entitled them to receive a larger share of the responsibility for regulating their compliance with security rules. We remain concerned that without the vigorous oversight and analytical capabilities of NRC and expert contractors, skills will deteriorate and corners will be cut.

On the other hand, more frequent drills could, of course, be all to the good, provided that they are meaningful and effective. Therefore, NRC must be able to maintain its role in helping to devise appropriate drills and independently evaluating performance. The NRC-observed exercises must be at least as stringent as the current OSRFs. In particular, the participation of skilled contractors in evaluated exercises has been repeatedly flagged by regional inspectors as an essential component of a credible program.

5. Comments on the process.

We are not happy with the degree to which the industry has insinuated itself into the Part 73 rulemaking. While the goal may be to develop more effective and efficient rules, the "interactive rulemaking" process has been anything but effective and efficient in this case. The process of developing the self-assessment program and rewriting the 73.55 rule resembles a contract negotiation, where NEI and NRC debate every word and concept. The relationship between the regulator and the licensee should not be a negotiated contract. The NRC's contract is with the public to protect their health and safety --- it is not with NEI.

While we are grateful for the opportunity to participate in public meetings, neither NCI nor other public interest organizations can possibly field the same resources as NEI. Therefore, the public will always be at a disadvantage in interactive rulemakings. It may be more equitable to return to a model in which both industry and the public have less of a role in the actual rulemaking process, but both have the ability to provide comments on draft rules, which can then be considered on a more equal footing.

Overview

- **Risk-Informing 10 CFR 73.55 and Related Power Reactor Security Regulations**
- **Definition of Radiological Sabotage and Performance Criteria**
- **Design Basis Threat and Adversary Characteristics**
- **Industry's Interim Program**

Future Schedule

- **Summer 2000 - Endorse industry's Safeguards Performance Assessment Program**
- **Late 2000 - Begin SPA exercises (terminate OSRE exercises)**
- **May 2001 - Proposed rule issued for public comment**
- **November 2002 - Final rule issued**

Self-Assessment Program



Why an industry program?

- SECY 99-024--"...the (Safeguards Performance Assessment) SPA Task Force concludes that the industry can assume more responsibility for performance assessment..."
- SRM 99-024
- SECY 99-241
- SRM 99-241



Exercise Rule

- Licensee develop target sets
- Licensee develop scenarios
- Licensee conduct drills and exercises
- Licensee evaluate performance
- Licensee correct weaknesses

3



Industry views

- Current rule is deterministic
 - Must change to performance based rule
 - Need clearly define performance criteria
- Industry was willing to develop a contingency response evaluation program
 - Can be implemented near term
 - Supports long term rulemaking goals

4



Goal to have interim program by mid-2000

- Sept 99--Developed draft self-assessment guide
- Oct 99--Industry review
- Nov 99--Resolution of industry issues
- Dec 99--working draft provided to NRC for discussion
- March 00--Final industry and NRC review
- April 00--Industry and NRC comments resolved



5

Background

- Developed by subgroup of security managers
 - Detailed review by Security Working Group
 - Details worked with all security managers through regional associations
- Has been through two industry and NRC review cycles
- Program guide, NEI 99-07, is ready for use



6

Interim program

- Industry alternative fits with NRC long term rule objectives
 - Tests rule concepts before finalized
 - Three year program to fit with rulemaking effort
 - Provides for NRC oversight
- Takes advantage of training already being conducted by many facilities



7

Assessment against what?

- Consistent contingency response design and assessment
 - Has been a fundamental issue
 - Significant discussion with the NRC over the last 6 months--still an issue!
- Plant protection--significant core damage --target sets
- Design Basis Threat--clearly specify adversary characteristics



8

Core program

- Procedure for developing target sets
- Procedure for developing scenarios
- Three year cycle of evaluated drills and exercises
 - one drill per year for each shift
 - one exercise every three years
 - Over three year cycle evaluates full range of contingency response capability



9

Evaluated

- Drill Evaluates at least one contingency response program element
 - Element identified as part of scenario preparation
 - Basis for evaluation during critique
- Deficiencies handled as part of training or corrective action program



10

Evaluated exercise

- Contains multiple scenarios
- Range of adversary capabilities
- Demonstrates all 6 key program elements
- Expect the NRC staff to observe
- Three year cycle

11



Industry approval

- Guide is ready now
- Need bases for adversary--a key issue that must be resolved
- Will provide to industry for vote--goal is approval by the end of May

12



Industry implementation

- Volunteers to conduct evaluated exercise during first 6 months
- Schedule for evaluated exercises
 - Based on date of last OSRE
 - ◆ First year--22 facilities with oldest dates
 - ◆ Second year-- 22 with middle dates
 - ◆ Last year--those with most recent OSRE
 - Coordinate scheduling with region





ACRS MEETING HANDOUT

Meeting No. 472ND	Agenda Item 12	Handout No: 12.1
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Title **FUTURE ACRS ACTIVITIES - 472nd ACRS MEETING, MAY 11-13, 2000**

Authors **JOHN T. LARKINS**

Number of Documents Attached

1

Instructions to Preparer 1. Punch holes 2. Paginate attachments 3. Place copy in file box	From Staff Person JOHN T. LARKINS
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**ANTICIPATED WORKLOAD
JUNE 7-9, 2000**

LEAD MEMBER	BACKUP	ENGINEER	ISSUE	FULL COMM. REPORT	SUBC. MTG.	
					CHAIR.	MEMBER
Aposlolakis	--	Dudley/Sorensen	Safety Culture-presentation by Sorensen	Report to be discussed at the July mtg.	--	P&P 6/6
Barton	Sieber	Singh/Weston	Proposed Final Revision 1 to Reg. Guide 1.54, Protective Coatings ¹	--	--	--
		Singh	Davis Besse Plant visit - Briefing by Mr. Singh on Arrangements	--	--	--
Bonaca	--	Dudley	Regulatory Effectiveness of the Station Blackout Rule ²	Report	--	P&P 6/6
	Seale	Dudley	License Renewal Documents (SRP, GALL II, Reg. Guide)- Develop Review Plan.	--	--	
Kress	--	El-Zeftawy	Proposed Resolution of GSI-173A, Spent Fuel Storage Pool for Operating Facilities	Report	--	--
	--	Boehnert/Weston	Proposed Final Reg. Guide and SRP on Revised Source Term	Report		
Uhrig	--	Singh	ABB/CE and Siemens Digital I&C Applications ³	--	--	--

¹Mr. Barton recommends that the Committee not review this matter and issue a Larkinsgram.

²Dr. Bonaca recommends that the Committee review this matter at the June meeting.

³Staff SER on ABB/CE Topical Report not available. P&P Subcommittee recommends that Dr. Uhrig hold a Subcommittee meeting to discuss these matters prior to referring to the full committee.

ANTICIPATED WORKLOAD
July 12-14, 2000

LEAD MEMBER	BACKUP	ENGINEER	ISSUE	FULL COMM. REPORT	SUBC. MTG.	
					CHAIR.	MEMBER
Apostolakis	Sieber	Markley	Proposed Final ASME Standard (Phase 1) for PRA Quality	Report	RPRA 6/28-29	P&P 7/11 PO 6/13-14 (Davis Besse/ Region III)
	--	Dudley/ Sorensen	Safety Culture (Presentation scheduled for the June meeting).	Report	--	
Bonaca	Barton	El-Zeftawy	Performance-Based Regulatory Approach	Report	--	P&P 7/11 PO 6/13-14 (Davis Besse/ Region III) RPRA 6/28-29
Kress	Apostolakis	Dudley	NEI Letter on Risk-Informing Part 50 (Commission Request)	Report	--	PO 6/13-14 (Davis Besse/Region III) RPRA 6/28-29
Shack	Apostolakis	Markley	Proposed revision to 10 CFR 50.44 (Option 3) concerning combustible gas control system/advance notice of proposed rulemaking (10 CFR 50.69 and Appendix T)	Report	--	PO 6/13-14 (Davis Besse/Region III) RPRA 6/28-29

ANTICIPATED WORKLOAD
July 12-14, 2000

LEAD MEMBER	BACKUP	ENGINEER	ISSUE	FULL COMM. REPORT	SUBC. MTG.	
					CHAIR.	MEMBER
Sieber	Apostolakis	Boehnert/Weston	Draft SER for the South Texas Project Exemption Request	Report	--	PO 6/13-14 (Davis Besse/Region III) RPRA 6/28-29
Wallis	--	Boehnert	RES Thermal-Hydraulic Input to PTS Technical Basis Reevaluation Project. ¹	Report	--	RPRA 6/28-29

¹The planning and procedures Subcommittee recommends that the Committee write a report on all three components (fracture mechanics, risk, and thermal-hydraulics) of the PTS Technical Basis Reevaluation Project, and that Drs. Shack, Apostolakis, and Wallis provide their views.

W

II. ITEMS REQUIRING COMMITTEE ACTION

4. License Renewal Documents: SRP, GALL II, and Regulatory Guide (Open)
(MVB/ NFD) ESTIMATED TIME: 2 hours

Purpose: Develop a Review Strategy

Review requested by the ACRS. The staff is preparing a Standard Review Plan (SRP), a Generic Aging Lessons Learned (GALL) II Report, and a Regulatory Guide associated with the preparation and review of license renewal applications. The Nuclear Energy Institute (NEI) has prepared NEI 95-10 that provides licensees with implementing guidance for developing license renewal applications. The staff is meeting with NEI to discuss drafts of different sections of the above documents. The staff plans to issue the documents for public comment in August and hold a workshop in September 2000. The staff is scheduled to brief the Commission in November 2000. The staff plans to meet with the Plant License Renewal Subcommittee in October 2000 to discuss the latest drafts of these documents, and brief the Committee at the November 2000 ACRS meeting.

Dr. Bonaca recommends that the ACRS, during the June ACRS meeting, discuss and approve the plan and assignments for reviewing these documents and review and comment on these documents at the November 2000 ACRS meeting. He has proposed assignments to the members for reviewing these documents. The proposed assignments will be distributed to the members during the discussion of the Future Activities.

As recommended by the Planning and Procedures Subcommittee, Dr. Bonaca will develop a list of high-level questions and issues that should be considered by the members during their review of the portions of the license renewal documents in their assigned areas of responsibility. These questions and issues will be distributed to the members during the June ACRS meetings.

5. Regulatory Effectiveness of the Station Blackout Rule (Open) (MVB/NFD)
ESTIMATED TIME: 1 ½ hours

Purpose: Decide on a Course of Action

Review Requested by the NRC Staff. The Office of Nuclear Regulatory Research is reviewing the regulatory effectiveness of selected NRC regulations. The first regulation reviewed by the staff was the Station Blackout Rule. The staff plans to provide the ACRS with a copy of its evaluation by May 5, 2000, and brief the full Committee at the June 2000 ACRS meeting.

The Planning and Procedures Subcommittee recommends that the Committee review this matter during the June meeting.

6. Common-Mode Failure Results in Loss of Both Low-Pressure Safety Injection Pumps at Arkansas Nuclear One, Unit 1 (JJB/MTM) ESTIMATED TIME: 1 ½ hours

Purpose: Decide on a Course of Action

Briefing requested by the ACRS. On February 5, 2000, the licensee declared both low-pressure safety injection (LPSI) pumps inoperable after the inboard pump bearing temperature exceeded the alarm setpoint. At the time, the licensee had taken the Unit offline to perform scheduled maintenance. The Unit was in HOT SHUTDOWN and the licensee placed the LPSI system in service for decay heat removal. A high bearing temperature alarm annunciated and the licensee secured the pump.

Further investigation revealed that a design change had been made in 1992 to replace the cast iron inboard and outboard bearing housings with stainless steel inboard bearing housings for increased corrosion resistance. In 1999, the licensee also implemented a design change to increase the oil viscosity and to minimize wear. The engineering evaluations for these changes do not appear to have sufficiently considered low service water temperature as a design limiting case for component bearings. Accordingly, the licensee did not provide the vendor with adequate specifications in its procurement request.

The NRC subsequently dispatched a Special Inspection Team (SIT) to the site to investigate this matter. Preliminary findings of the SIT indicate that the licensee did not demonstrate component performance for all limiting conditions after the design and maintenance changes. Common-mode failure of both LPSI pumps have resulted in the loss of emergency core cooling system recirculation. High pressure injection would not be available and reactor building spray pumps would not serve as an equivalent backup for recirculation cooling. The SIT report was forwarded for ACRS review on May 8, 2000.

During the April 2000 meeting, Mr. Barton agreed to propose a course of action after reviewing the SIT report.

7. Committee Visit to DOE/DOD Naval Reactors Facilities Pursuant to Review of VIRGINIA Class Submarine Design (RLS/PAB) ESTIMATED TIME: 4 hours

Purpose: Decide on Schedule for Site Visit

ACRS Initiative The Naval Reactors (NR) Organization will be submitting its new submarine design (VIRGINIA Class, successor to the LOS ANGELES Class) to the NRC and ACRS for review in mid-2001. The Committee last reviewed an NR reactor plant design (SEAWOLF) in 1994. Only four of the current ACRS members were on the Committee at the time of that review.

Dr. Powers had suggested that the Committee interact with NR, early on, to become familiar with its organization, history, and approach. The Committee members visited the NR Headquarters Office at Crystal City, Virginia and

discussed the Naval Reactors program on the morning of April 4, 2000. In the near future, the Committee is also expected to visit the NR training complex located at the Charleston, South Carolina Naval Base. This complex is comprised of the Moored Training Ships and the Nuclear Power Training School. The dates proposed by NR are attached.

The Planning and Procedures Subcommittee recommends that the committee consider August 7 for its visit to Charleston.

8. Proposed Final Revision 1 to Regulatory Guide 1.54, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants" (Formerly DG-1076) (Open) (JJB/AS) ESTIMATED TIME: 1hour

Purpose: Decide on a Course of Action

Review requested by the RES staff. Regulatory Guide (RG) 1.54 was originally issued in June of 1973 and endorsed the ANSI standards for Protective Coatings. Many of the standards referenced in RG 1.54 are outdated and have been replaced by newer ASTM or ANSI standards "Coatings for Power Generation Facilities," developed by the ASTM Committee D-33.

The proposed Revision 1 to RG 1.54 (DG-1076) was issued for public comment in march 1999. The staff received seven comments. Two responders, the Nuclear Energy Institute (NEI) and the ASTM recommended that final issuance of the revised guide be deferred until the ASTM Committee D-33 completed revisions to ASTM Standard D-5144, "Standard Guide for Use of Protective Coating Standards, in Nuclear Power Plants." This is a key ASTM Standard which incorporates important safety related coatings definitions and also incorporates by reference the other key ASTM Standards endorsed in DG-1076. It appears that the revised Standard D-5144 will be issued by the end of June 2000. The staff plans to issue the final Revision 1 to RG 1.54 after the ACRS review and comments.

During the February 1999 meeting, the Committee considered the proposed Revision 1 to RG 1.54. A Larkinsgram dated February 11, 1999, was sent to the EDO, stating that the Committee would like the opportunity to review the proposed final version of DG-1076 after the staff has reconciled the public comments. The staff has provided a copy of the proposed final Revision 1 to RG 1.54 and the various standards to the ACRS in April and requests to brief the Committee during its June 7-9, 2000 meeting.

Mr. Barton recommends that the Committee not review this Guide.

9. Redefinition of Large-Break LOCA Pursuant to Option 3 of Staff Plan for Risk-Informing Technical Requirements in 10 CFR Part 50 (Open) (GBW/PAB)
ESTIMATED TIME: 1 ½ hours

Purpose: Decide on a Course of Action

Pursuant to Option 3 of SECY-99-264, the Westinghouse Owners Group (WOG) has approached the staff with a program for redefinition of the large-break (LB) LOCA with regard to the requirements of 10 CFR 50.46 and Appendix K. The WOG and the staff met on this matter in March and another meeting is planned for May 18, 2000. The WOG is proposing to "redefine" the LBLOCA from a double-ended guillotine break to a break in the range of 6-10 inches in diameter, based on the probability of occurrence. The (WOG) is proposing a Program Plan that would result in a revised ECCS Rule sometime in 2002. In accordance with SECY-99-264, the staff will be providing a Paper to the Commission in December 2000 that identifies and prioritizes a list of recommended candidate changes for risk-informing Part 50. It is likely that the ECCS Rule will be a candidate for this risk-informing effort.

The Planning and Procedures Subcommittee recommends that Dr. Wallis propose a course of action.

10. NRR User Need Request Related to Steam Generator Severe Accident Response and Testing of Steam Generator Tubes (Open) (TSK/RLS/PAB/NFD)
ESTIMATED TIME: 2 hours

Purpose: Decide on a Course of Action

NRR has requested RES assistance in two related areas dealing with steam generator tube integrity. These areas are: (1) steam generator tube integrity in response to severe accident conditions, and, (2) investigation of the behavior of cracks in steam generator tubes under pressure differentials and elevated temperatures associated with "high-dry" severe accident sequences. Area (1) arose from problems the staff encountered in its review of the electrosleeve repair process employed on the Callaway plant, and the products being requested for the Area (2) studies are similar to the issues that have been raised by Dr. J. Hoppenfeld in his DPO on steam generator integrity. Additional information on this matter was provided by a April 19, 2000 memorandum from P. Boehnert.

Information will be provided on the tube testing program (Area 2), in conjunction with the Committee's review of the staff's resolution approach for the tube integrity issue (scheduled for this fall). Resolution of the issues associated with tube behavior under severe accident conditions (Area 1) is a longer-term program (to conclude in summer, 2001).

The Planning and Procedures Subcommittee recommends that the Committee not review this user need request. The Committee should

consider reviewing the products resulting from this user need request when available.

11. ABB/CE and Siemens Digital I&C Applications (Open) (REU/AS)
ESTIMATED TIME: 1 ½ hours

Purpose: Decide on a Course of Action

Review requested by the ACRS. ABB-CE [(now known as British Nuclear Fuels (BNF))] submitted a topical report for the Common Qualified Platform that is the physical realization of the design that was proposed in the ABB-CE System 80+. The proposed digital instrumentation and control (I&C) system would replace the existing reactor protection system, engineered safety features system, and post accident monitoring system. The staff has also reviewed the Topical Report on Digital Reactor Protection System submitted by Siemens Power Corporation. This Topical Report describes a digital I&C system designed to be used in safety related I&C applications in nuclear power plants as replacements for or upgrades to analog I&C systems. The staff plans to provide the SERs to the ACRS in early July and brief the full Committee in September.

The Planning and Procedures Subcommittee recommends that Dr. Uhrig hold a Subcommittee meeting in August to discuss this matter prior to referring it to the full Committee for consideration. Also, he should recommend a consultant to the Committee in the digital I&C area.

From: Paul Boehnert
To: "KeithlineKA@NAVSEA.NAVY.MIL"@GATED.nrcsmtp
Date: Tue, May 9, 2000 2:16 PM
Subject: Re: RE: DATES FOR CHARLESTON VISIT

Thanks Kimberly — the ACRS meeting is this week. I will get a date that is mutually acceptable to as many members as possible.

Paul

>>> Keithline Kimberly A NSSC <KeithlineKA@NAVSEA.NAVY.MIL> 05/09 11:17 AM >>>
Paul,

I have a list of dates that will work for everybody on our end. They are:

Monday, August 7
Tuesday, August 8
Wednesday, August 9
Thursday, August 10

Wednesday, August 23
Thursday, August 24
Friday, August 25

I checked into September, but that gets much more complicated because several key people will be on travel for a couple weeks and they don't know exactly which weeks yet.

Hopefully, one of the August dates will work for you and the ACRS members.

Kimberly

—Original Message—

From: Paul Boehnert [<mailto:PAB2@nrc.gov>]
Sent: Thursday, May 04, 2000 7:58 AM
To: keithlineKA@NAVSEA.NAVY.MIL
Cc: wishack@anl.gov; BOBSEALEAZ@aol.com; JDSIEBER@aol.com;
TSKress@aol.com; graham.b.wallis@dartmouth.edu; apostola@mit.edu;
HJL@nrc.gov; JTL@nrc.gov; RPS1@nrc.gov; SXD1@nrc.gov;
dapower@sandia.gov; mvbonaca@snet.net; RUHRIG@UTK.EDU
Subject: DATES FOR CHARLESTON VISIT

Kimberly: Would it be possible for you to get the potential dates for the Charleston visit by next Tuesday? There is a "Planning and Procedures" subcommittee meeting on Wednesday where the Committee members plan to discuss this matter.

Thanks

Paul

May 4, 2000

MEMORANDUM TO: John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards

FROM: James L. Blaha */RA/*
Assistant for Operations
Office of the Executive Director for Operations

SUBJECT: PROPOSED AGENDA ITEMS FOR THE ACRS AND THE ACNW

Attached is a listing of proposed agenda items for the ACRS for the months of June 2000 - October 2000. Also, attached is a listing of the proposed ACNW agenda items for June 2000 - July 2000.

An annotated copy of our Work Items Tracking System (WITS) for the upcoming three month period is attached. In addition, a projection of office originated Commission papers that may also be of interest to the ACRS/ACNW. If there are particular items identified out of the field of projected Commission papers that were not planned to bring to the ACRS/ACNW for formal review or briefing, but that are of Committee(s) interest, please provide timely feedback on such preferences.

Attachments: As stated

May 4, 2000

MEMORANDUM TO:

John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards

FROM:

James L. Blaha /RA/
Assistant for Operations
Office of the Executive Director for Operations

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Attachments: As stated

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AO R/F

KKerr, SP (O-3H20)

JMitchell, RES (T-9C24)

EOklesson, RES (T-10D5)

MCase, NRR (O-5E13)

MCrutchley, NRR (O-5E13)

RTurtill, NMSS (T-7J8)

MVirgilio, NMSS (T-8A23)

CSiegel, IRO (T-4D18)

SMeador, ACRS (T-2E26)

GMillman, OEDO

PAnderson, OEDO

**YOUR INPUT FOR JULY 2000 - OCTOBER 2000 FOR
THE ACRS; JULY 2000 - OCTOBER 2000 FOR THE ACNW.
IS DUE TO OEDO BY **May 24, 2000.****

The next ACRS meeting will be June 7 - 9, 2000.

The next ACNW meeting will be June 13 - 15, 2000.

**For all ACRS review and comment items, include a date
by which an ACRS response is needed.**

Please e-mail your office response to PAA. Thanks.

DOCUMENT NAME: ACRSschedule-PAA.WPD

OEDO

GMillman:paa
05/04/00

DEDE/OEDO

CPaperiello
05/04/00

DEDR/OEDO

FMiraglia CJP for
05/04/00

AO/OEDO

JBlaha
05/04/00

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**AGENDA FOR
ACRS MEETINGS
(June - October, 2000)**

ACRS MEETING --- JUNE 7 - 9, 2000				
Item #	Title/Issue	Purpose	Priority	Documents
1	GSI 173A, Spent Fuel Pool Cooling Issue for Operating Plants Contact: C. Gratton, DSSA/NRR	Review and Comment	High	Pertinent documents provided on 5/2/00. Response due within 4 weeks.
2	DG-1081, "Alternative Radiological Source Terms for Evaluating Design Bases Accidents at Nuclear Power Reactors" Contact: S. LaVie, DSSA/NRR	Review and Comment	High	SRP and RG to be provided by 5/8/00.
3	ABB-CE and Siemens Digital I&C Applications Contact: E. Marinos, DE/NRR	Information Briefing	High	Draft SE will be provided by 5/22/00.
4	Regulatory Guide 1.54, "Service Levels I, II, III Protective Coatings ..." Contact: A. Serkiz, DET/RES	Review and Comment	High	RG and other pertinent documents to be provided by 5/12/00. Response due by 6/30/00.
5	Regulatory Effectiveness, Station Blackout Contact: J. Rosenthal, DSARE/RES	Information Briefing	Medium	Draft report to be provided by 5/5/00.

ACRS MEETING — JULY 12 - 14, 2000

Item #	Title/Issue	Purpose	Priority	Documents
1	The South Texas Project Graded QA Program Exemption	Review and Comment	High	Pertinent documents to be provided by 6/9/00.
	Contact: R. Gramm, DLPM/NRR			
2	Performance-Based Regulation	Information Briefing	High	Draft Commission paper to be provided by 6/12/00.
	Contact: P. Kadambi, DSARE/RES			
3	Proposed Update to 10 CFR Part 52	Review and Comment	Medium	Proposed rule to be provided by 6/12/00.
	Contact: J. Wilson, DRIP/NRR			
4	Part 50.44, Combustible Gas Control (Option 3)	Review and Comment	High	Draft Commission paper to be provided by 6/26/00.
	Contact: M. Drouin, DRAA/RES			
5	Use of Voluntary Initiatives in the Regulatory Process	Information Briefing	Medium	Paper to be provided upon completion of Commission review.
	Contact: G. Carpenter/R. Hermann, DE/NRR			

ACRS MEETING --- August 30 - September 1, 2000				
Item #	Title/Issue	Purpose	Priority	Documents
1	Performance-Based, Risk-Informed Fire Protection Standard for LWRs and Related Issues	Review and Comment	Medium	RG and other relevant documents will be provided by 8/2/00. NFPA 805 will not be revised before meeting.
	Contact: E. Weiss, DSSA/NRR			
2	Proposed Final Guidance on Use of Risk Information in License Amendment Reviews	Review and Comment	High	Proposed final SRP and other relevant documents to be provided by 7/19/00.
	Contact: R. Palla, DSSA/NRR			
3	Risk-Informed Part 50 (Option 2)	Review and Comment	High	Draft SECY paper to be provided by 8/15/00.
	Contact: T. Bergman, DRIP/NRR			
4	BWR Vessel and Internal Project	Information Briefing	Medium	Report to be provided by 8/3/00.
	Contact: G. Carpenter, DE/NRR			
5	Operating Events at Indian Point 2	Information Briefing	Medium	Pertinent documents will be provided by 8/2/00.
	Contact: L. Marsh			

ACRS MEETING --- October 5 - 7, 2000				
Item #	Title/Issue	Purpose	Priority	Documents
1	NEI 97-06, Steam Generator Program Guidelines	Review and Comment	Medium	Draft SER to be provided by 9/8/00.
	Contact: J. Anderson, DE/NRR			

**AGENDA FOR
ACNW MEETINGS
(June and July, 2000)**

ACNW MEETING --- JUNE 13 - 15, 2000				
Item #	Title/Issue	Purpose	Priority	Documents

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1	LLW Branch Technical Position for Performance Assessment	Information Briefing	High	Technical position was provided on 5/2/00.
	Contact: M. Thaggard, DWM/NMSS			
2	West Valley Policy Statement Public Comments	Information Briefing	High	Draft West Valley policy statement was provided on 5/3/00.
	Contact: J. Parrott, DWM/NMSS			
3	NRC LLW Program Status	Information Briefing	Medium	None.
	Contact: T. Essig/J.Kennedy, DWM/NMSS			
4	Informal Discussion with Director, NMSS	Information Exchange	Medium	None.
	Contact: J. Greeves			

ACNW MEETING --- JULY 25 - 27, 2000				
Item #	Title/Issue	Purpose	Priority	Documents
1	Performance-Based regulation	Information Briefing	High	Draft Commission paper to be provided by 6/12/00.
	Contact: P. Kadambi, DSARE/RES			
2	Key Technical Issues Closure (Yucca Mountain)	Information Briefing	Medium	None.
	Contact: B. Reamer, DWM/NMSS			
3	Hydrogeologic Model Development and Parameter Uncertainty	Information Briefing	High	None.
	Contact: T. Nicholson, DRAA/RES			
4	Rebaselining the Decommissioning Program Contact: L. Camper, DWM/NMSS	Information Briefing	Medium	Commission paper to be provided.
5	Informal Discussion with Director, NMSS	Information Exchange	Medium	None.
	Contact: W. Kane			

ACRS MEETING HANDOUT

Meeting No. 472ND	Agenda Item 14	Handout No: 14.1
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Title **MINUTES OF PLANNING & PROCEDURES
SUBCOMMITTEE MEETING - MAY 10, 2000**

Authors **JOHN T. LARKINS**

List of Documents Attached

14

Instructions to Preparer 1. Punch holes 2. Paginate attachments 3. Place copy in file box	From Staff Person JOHN T. LARKINS
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May 11, 2000

MINUTES OF THE
PLANNING AND PROCEDURES SUBCOMMITTEE MEETING
WEDNESDAY, MAY 10, 2000

The ACRS Subcommittee on Planning and Procedures held a meeting May 10, 2000, in Room 2B1, Two White Flint North Building, Rockville, Maryland. The purpose of the meeting was to discuss matters related to the conduct of ACRS business. The meeting was convened at 1:00 p.m. and adjourned at 4:15 p.m.

ATTENDEES

D. A. Powers, Chairman
G. A. Apostolakis, Vice-Chairman
M. Bonaca, Member-at-Large

ACRS STAFF

J. T. Larkins
H. Larson
R. P. Savio
S. Duraiswamy
C. Harris
S. Meador
J. Gallo
G. Cronenberg (part time)
N. Dudley (part time)

DISCUSSION

- 1) Review of the Member Assignments and Priorities for ACRS Reports and Letters for the May ACRS Meeting

Member assignments and priorities for ACRS reports and letters for the May ACRS meeting are included in a separate handout. Reports and letters that would benefit from additional consideration at a future ACRS meeting were discussed.

RECOMMENDATION

The Subcommittee recommends that the assignments and priorities for the May 2000 ACRS meeting be as shown in the handout. The Committee should try to complete the discussion of all proposed ACRS reports by close of business Friday, May 12, 2000. On Saturday, after approving all ACRS reports as needed, the Committee should discuss the following:

- License Renewal
- Approach to the next research report

- Impact the ACRS wants to have on the move toward risk-informed regulation, including Safety Goal Policy Statement and adequate protection
- Strategy for expressing ACRS views in the future on low-power and shutdown operations risk
- Organizational factors/safety culture
- Industry standards for PRA quality

2) Anticipated Workload for ACRS Members

The anticipated workload of the ACRS members through July 2000 is included in a separate handout. The objectives are: (1) to review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate, (2) to manage the members' workload for these meetings, and (3) to plan and schedule items for ACRS discussion of topical and emerging issues.

During this session, the Subcommittee discussed and developed recommendations on the items that require Committee decision, which are included in Section II of the Future Activities list.

RECOMMENDATION

The Subcommittee recommends that the members provide comments on the anticipated workload. Changes will be made, as appropriate.

3) Meeting with German Reactor Safety Committee/Visit to Siemens and a Nuclear Plant

At the request of the German Reactor Safety Committee (RSK), several members planned to travel to Germany in June to meet with the RSK members and to visit Siemens as well as a nuclear power plant. This trip is primarily to discuss the use of digital instrumentation and control systems at nuclear power plants.

Although the RSK staff recently responded to an e-mail from the ACRS staff and provided a detailed agenda, it was decided to postpone this trip to allow time to better define the scope of the meeting with RSK.

The ACRS Executive Director has suggested alternative dates to the RSK of September 11-15, 2000 and October 23-27, 2000.

RECOMMENDATION

The Subcommittee recommends that the Committee select dates for this meeting and that the ACRS Executive Director continue to interact with the RSK staff to finalize the dates and agenda for this meeting.

4) Mandatory Use of the Government Sponsored Charge Card

A copy of the April 28, 2000 NRC Yellow Announcement, "Mandatory Use of the Government Sponsored Charge Card for Travel," is attached for information (p. 1). This

announcement supersedes all previous announcements on this matter. The mandatory use of the government sponsored charge card for official government travel became effective on May 1, 2000. This card must be used to pay for lodging expenses and for any other expenses that exceed \$75 while on official travel.

RECOMMENDATION

This is for information only.

5) Commission Paper on ACRS/ACNW Self Assessment

A proposed Commission paper on ACRS/ACNW self assessment and a summary matrix of the ACRS letters and reports were distributed to the members for review during the April 2000 ACRS meeting. Comments provided by some members have been incorporated into the final version of these documents. These documents were sent to the Commission on Friday, May 5, 2000. In the future the Self Assessment, including the matrix of letters, will become a part of the ACRS/ACNW Operating Plan. In going through the process of preparing this document, the ACRS staff recognizes the benefit of an ACRS Priority Plan and recommends that the Committee endorse the preparation of a Priority Plan for CY 2001-2002.

RECOMMENDATION

The Subcommittee recommends that the ACRS staff keep the Committee informed of Commission's feedback on these documents and that the Committee approve the future development of an ACRS Priority Plan.

6) Division of Responsibilities Between ACRS and ACNW for Reviewing Decommissioning Activities

A paper outlining a division of responsibilities between ACRS and ACNW for reviewing the NRC staff activities in the area of decommissioning, proposed by Dr. Savio, is included in the Attachment (pp. 2-16). This proposal was discussed by the Planning and Procedures Subcommittee during its April meeting. It was distributed to the members for consideration during the April ACRS meeting. During that meeting, the Committee agreed that Drs. Apostolakis and Kress, members of the ACRS/ACNW Joint Subcommittee, should review Dr. Savio's proposal and recommend a course of action for consideration by the Planning and Procedures Subcommittee at its May 10, 2000 meeting. Subsequently, Dr. Savio should revise the proposal, as needed, incorporating the Subcommittee comments. The ACNW has reviewed this paper during its March 2000 meeting and concurred with the proposed ACNW activities and assignments.

The NRC has received a request from NEI (Attachment, pp. 17-20) to combine the integrated rulemaking plan (the single rulemaking that would address the issues on emergency planning, financial indemnity, safeguards/physical protection, operator staffing and training requirements, and Backfit Rule applicability that are now being addressed in separate rulemakings) and the rulemaking plan for the consolidation of decommissioning regulation into a single rulemaking. (All of these rulemaking actions

*Committee
voted on and
approved the
division of
labor.
5-12-00*

are intended to be risk informed.) NEI is proposing that the single risk-informed rulemaking consolidating all decommissioning regulations could be completed in about 24 months. The staff and NEI met and discussed the NEI request on May 9, 2000.

In addition, it appears that some agreement states may implement decommissioning requirements that are more restrictive than the NRC requirements. We will keep the ACRS informed.

We recommend that the paper prepared by Dr. Savio, as modified by the Subcommittee, be attached to the Future Activities list and modified as needed to accommodate future changes.

RECOMMENDATION

The Subcommittee recommends that the full Committee approve the decommissioning paper and that it be attached to the ACRS Future Activities list and that the tasks and schedules be modified as needed to accommodate future changes. The tasks will be addressed in the scheduling of ACRS activities by using the established Future Activities scheduling process.

7) Meeting with Stakeholders

During the January 2000 retreat, the ACRS discussed ways in which the Committee could interact with stakeholders, including NEI, INPO, and utilities, to obtain information on significant stakeholders' issues. As recommended by the Planning and Procedures Subcommittee, Dr. Savio developed a proposal (Attachment, pp. 21-22) for such interaction. It was discussed by the Subcommittee during its April 4, 2000 meeting. The full Committee considered Dr. Savio's proposal during the April 2000 meeting. The members have been requested to provide comments to Dr. Savio and to be prepared to agree on a course of action during the May meeting. So far, no comments have been received by Dr. Savio.

RECOMMENDATION

The Subcommittee recommends that Drs. Apostolakis and Savio arrange a meeting with NEI and include other interested stakeholders. The ACRS should agree on a course of action with respect to items being proposed.

8) Memorandum of Understanding

The existing Memorandum of Understanding (MOU) between the ACRS and the EDO has not been revised since 1988. Since the Committee practices have changed with regard to reviewing regulatory issues, there is a need to revise the MOU to reflect the changes in the Committee practices. Accordingly, the current MOU has been revised to make it simpler, concise, and easy to follow. A draft of the revised MOU has been sent to the EDO for initial feedback (Attachment, pp. 23-28).

Since the MOU deals with procedural issues and as the agency and Committee practices change, the MOU has to be revised periodically to accommodate such changes, it is recommended that the MOU be signed by the ACRS/ACNW Executive Director.

RECOMMENDATION

The Subcommittee recommends that the members provide comments on the proposed revision to the MOU and authorize the ACRS/ACNW Executive Director to sign the MOU.

*Committee
voted &
approved
5-12-00*

9) Power Uprate Review Guidance

Dr. Cronenberg, ACRS Senior Fellow, has prepared a report dated February 7, 2000, on the process being used by the staff in reviewing power uprate applications submitted by licensees. This report has been distributed to the members. In that report, Dr. Cronenberg recommended the need for a standardized and detailed process for use by the staff in reviewing power uprate applications. During the March 2000 meeting, the Planning and Procedures Subcommittee suggested that Dr. Cronenberg obtain information from the staff with regard to ongoing or planned staff activities for standardizing the power uprate review process.

Based on his conversation with the staff, Dr. Cronenberg learned that although some sort of standardized review guidance for power uprate applications was considered, NRR believes that the current process for reviewing such applications is adequate in light of the PWR and BWR Owner Groups' guidance to the licensees with regard to information to be included in the license renewal applications. However, in the future the staff may consider developing detailed guidance for reviewing the power uprate applications.

RECOMMENDATION

The Subcommittee recommends that the Committee, when reviewing the next power uprate request, discuss with the staff the need for developing detailed guidance for reviewing power uprate applications.

10) Proposed Assignments for Reviewing License Renewal Guidance Documents

The staff is in the process of preparing a Standard Review Plan, Generic Aging Lessons Learned II (GALL II) Report, and a Regulatory Guide associated with license renewal. The Committee needs to complete its review of these documents in November 2000. Dr. Bonaca, Chairman of the Plant License Renewal Subcommittee, has proposed assignments for the members for reviewing these documents (Handout on Saturday). These documents will be provided to the members during August 2000.

RECOMMENDATION

The Subcommittee recommends that the members review and comment, prior to the June 2000 ACRS meeting, on proposed assignments and on the schedule for reviewing these documents. The Committee should approve these assignments and review schedule during the June meeting. Subsequently, the members should review portions of the documents assigned to them and provide comments to Dr. Bonaca prior to the October full Committee meeting.

11) Risk From Low Power and Shutdown

Dr. Savio has been tasked with providing an assessment of the ACRS activities and accomplishments in the area of low power shutdown risk and providing recommendations as to a strategy for future ACRS involvement in this area. Drs. Powers, Larkins, and Savio will be working together on this task.

RECOMMENDATION

It was recommended that the ACRS approve an approach to LPSD risk, which includes collecting and cataloging information over a year's timeframe on LPSD as a part of the Committee reviews on related matters. After a year or so, the Committee would review this information and assess whether there was sufficient and significant information in the aggregate to develop a report to the Commission.

12) NRC Annual Performance Report

The Government Performance and Results Act (GPRA) requires federal agencies to produce annual performance reports, the first of which was due by March 31, 2000. The purpose of these reports is to provide the Congress and the American public with information which can be used to assess the effectiveness of the particular agency. The Mercatus Center (George Mason University) has recently issued a report evaluating 24 agencies' reports and performance as described in the reports. The NRC, DOE, FEMA, and DOT were included in this group of agencies.

RECOMMENDATION

The Subcommittee recommends that the Mercatus Center report and NRC's annual performance report be distributed to the ACRS members for their use in future discussions of NRC programs.

13) Items Proposed by Dr. Powers

The following items, proposed by Dr. Powers, were discussed by the Subcommittee (Attachment, p. 29):

- a) Outstanding obligations to the Commission based on SRMs.
- b) ACRS report to the Commission on the NRC Safety Research Program

- c) License renewal workload (should we have two Subcommittees to handle workload?)

RECOMMENDATION

The Subcommittee recommends that the Committee discuss these items during the May meeting and develop a course of action.

14) Meeting with Individual Commissioners

Dr. Powers met with individual Commissioners to discuss items of mutual interest. He will provide a brief report to the Committee on topics discussed and follow-up items resulting from these meetings.



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

Announcement No. 032

Date: April 28, 2000

To: All NRC Employees

**SUBJECT: MANDATORY USE OF THE GOVERNMENT SPONSORED CHARGE CARD FOR
OFFICIAL GOVERNMENT TRAVEL**

This announcement supercedes Yellow Announcement Nos. 11 and 13 on the same subject. Effective May 1, 2000, all NRC employees who anticipate traveling more than once per year (frequent travelers) must obtain a government sponsored charge card (Citibank VISA for NRC employees) and use that card for the payment of their official travel related expenses. Infrequent travelers (i.e., employees who are expected not to travel more than once per year) may request a Citibank VISA charge card but they are not required to do so.

The Citibank VISA card must be used to pay for lodging expenses and for any other expenses that exceed \$75 while on official travel. Both the Federal Traveler Regulations (FTR) and NRC policy require that the Citibank VISA charge card only be used to pay for items that are official travel related expenses. Generally, the Citibank VISA charge card may not be used for personal, family, or household purposes. These expenses should be paid for by the traveler through means other than the use of the Citibank VISA charge card. However, a non-reimbursable expense may be charged to the Citibank VISA charge card if it is for a small dollar amount and a reasonable effort to separate it from official travel related expenses has failed. Employees are reminded that the use of the charge card while on official travel is mandatory as provided in the Travel and Transportation Reform Act of 1998. This is the requirement of the law and is not an NRC initiative.

Another key provision of the law was the requirement for agencies to pay interest to employees when their travel vouchers are not processed and paid within 30 days from receipt by the payment approving office, which NRC has designated as the Travel Management Branch in headquarters. This provision will also go into effect on May 1, 2000. The agency is currently paying travel vouchers on average within 5 days from receipt in the OCFO.

While revisions are being made to reflect the policy changes above, this announcement supercedes the applicable sections in Management Directive 14.1, "Official Temporary Duty Travel." Questions concerning the Citibank VISA charge card program should be directed to John Walker at 301-415-6259 or e-mail JRW2.

/

1. **Improving Decommission Regulations for Nuclear Power Plants**

SECY-99-168 describes and approach for the consolidation of a number of ongoing rulemakings related to decommissioning into an integrated risk-informed rule. The SECY also describes a proposal for a comprehensive regulatory review of Title 10 to be preformed to determine what regulations are applicable to decommissioning nuclear power plants and to identify where clarifications or modifications are appropriate, based on risk significant differences between operating and decommissioning plants. Decommissioning regulations would be consolidated into a new location in Title 10.

The an risk informed integrated rulemaking will address the following issues.

- Emergency Planning
- Financial indemnity
- Safeguards/Physical Security
- Operator staff and required training
- Backfit rule applicably

These issues were currently being addressed in separate rulemakings actions and consolidating these actions into a single rulemaking will facilitate a consistent approach. As stated, the NRC is to use a risk-informed approach in this integrated rulemaking. The staff is considering including fitness for duty requirements in this integrated rule making.

Milestones:

- Rulemaking Plan on integrated rulemaking issues 6/30/00
- Rulemaking Plan for consolidation of decommissioning regulations 7/15/00

Proposed Lead Committee

- Areas to be addressed in the integrated rulemaking , with the exception of financial indemnity, are in the ACRS area of expertise and traditional responsibility. It is proposed that neither Committee undertake a review of financial indemnity issues. It is proposed that the Joint ACRS/ACNW Subcommittee take the responsibility for the review of the rulemaking plan for consolidated risk-informed rule.

Proposed Action

- ACRS review of rulemaking plan for the integrated rule and subsequent review of all areas to be addressed in the proposed rule with the exception of financial indemnity. Lead ACRS members would review the staff proposals and make recommendations as to what parts of the staff proposals needed to be addressed by the ACRS.
- Joint ACRS/ACNW Subcommittee review of rulemaking plan for consolidated risk-informed rule with subsequent review of the proposed rule. The Joint Subcommittee would refer responsibility for parts the proposed rule to either the ACRS or the ACNW after review of the rulemaking plan. The possible approaches to consolidating and risk-informing decommissioning regulations could be discussed during the ACNW workshop on decommissioning.

2. Spent Fuel Pool Accident Risk Assessment

Accidents associated with spent fuel pool storage are being examined as a significant source of risk for permanently shutdown nuclear power plants. Loss of spent fuel pool water with uncovering of the stored fuel and the occurrence of zirconium fires is being examined.

Milestones:

- Discussion during April 5-7, 2000 ACRS meeting and ACRS report 4/00

- NRC staff finalize spent fuel pool accident risk report

5/30/00

Proposed Lead Committee

- Assigned to ACRS in 12/21/99 SRM

Proposed action

- ACRS review and comment on content of the NRC staff report and ACRS discussion as to the status of the classification of design basis accidents for decommissioning power reactors
- ACRS followup on issues identified in its 11/12/99 report

3. Technical Specifications for decommissioning nuclear power plants

Regulatory oversight by the NRC is accomplished in part through the use of Technical Specifications. The associated needs change when the plant is in the decommissioning process. Standard Technical Specifications (STP) are being developed for decommissioning plants.

Milestones

- | | |
|-------------------------|------|
| ● Final STP for PWRs | FY01 |
| ● Proposed STP for BWRs | FY00 |
| ● Final STP for BWRs | FY01 |

Proposed lead Committee

- Areas to be addressed are in ACRS areas of expertise and traditional responsibility

Proposed Action

- A small team of ACRS members review the documents when available and identify issues for which ACRS review is needed

4. Evaluation of design basis accidents for decommissioning nuclear power plants

Design bases accidents for decommissioning plants be different from those associated with an operating plant. This activity will involve identification and evaluation of these design bases accidents. The NRC staff paper on spent fuel pool fires will partially address this issue.

Milestones

- To be determined

Proposed Lead Committee

- Areas to be addressed are in ACRS area of expertise and traditional responsibility.

Proposed Action

- Explore the NRC staff's plans for and thinking on this issue within the context of the ACRS review of the NRC staff paper on spent fuel pool accident risk and identify any need for further ACRS (or ACNW) involvement.

5. Regulatory Guides, SRPs, and inspection plans for decommissioning of power reactors.

This item covers the following staff activities

- Final Regulatory Guide DG 1067 on decommissioning of nuclear power reactors

To ACRS/ACNW 4/24

- Final Regulatory Guide DG 1071, "Standard Format and Content for Post Shutdown Decommissioning Activities Report."
 - To ACRS/ACNW 4/24
- SRP for License Termination Plans 5/00
- Revisions to IMC 2561 "Decommissioning Inspection Program" TBD
- Guidance on Maintenance Rule compliance for decommissioning plants
 - To be completed FY2000
- Final Regulatory Guide on fire protection for decommissioning plants, DG-1069
 - To be completed Early FY2001
- Guidance for evaluation of safety reviews (10CFR50.59) at permanently shutdown reactors i
 - FY2000

Milestones

- As noted above

Proposed Lead Committee

- As stated under proposed action

Proposed action

- ACRS lead members review of guidance on maintenance rule compliance, fire protection, and 10CFR50.59 reviews and identification of any areas for which ACRS review is appropriate. ACNW review of Regulatory Guides DG1067 and

DG-1071. No Committee review of decommissioning inspection guidance. ACNW has reviewed a draft version of the SRP for License Termination Plans. The final version is expected not to be changed in any significant way. ACNW will receive the final version of the SRP for what level of review it believes appropriate.

6. ACRS and ACNW briefing on NRC and utility experience with power reactor decommissioning

It is proposed that a group of ACRS and ACNW members visit a Region office and the site of a decommissioning reactor and receive briefings from Region offices and utility personnel on the issues and lesson-learned associated with the Region and utility experience with decommissioning. This would provide a opportunity for the attendees to learn more about actual field experience and the issues identified.

Milestone

- Schedule in FY2001

Proposed Lead Committee

- Do as a Joint ACRS/ACNW activity with participation by the appropriate ACRS and ACNW members

Proposed action

- Participating members of brief their committee on issues of interest after this visit.

7. NRR Licensing Oversight for Decommissioning reactor Facilities

NRR is currently provides management and licensing oversight for 16 decommissioning reactor facilities at a level commensurate with the associated risk

Milestones

- Ongoing activity

Proposed Lead Committee

- Joint ACRS/ACNW activity

Proposed Action

- Schedule as information briefing, repeated at about two year intervals, during which NRR would brief a Joint ACRS/ACNW group on the status of the NRR work. Participating members would then provide a report to their Committee on insights and issues of interest to that Committee.

Non-Power Reactors Licenses

1. Clearance Rule

The NRC is developing a rulemaking that would set specific requirements on the releases of solid materials. The ACNW was briefed on this issue during its December 1999 meeting and has issued a report. The final of NUREG 1640 will be issued in FY2001

Milestones

- Issue final NUREG 1640 (may be delayed for one year) 1/01

Proposed Lead Committee

- ACNW has the lead

Proposed Action

- ACNW will continued to follow the staff work on this matter as stated in the ACNW report.

2. Rubblized concrete dismantlement

Maine Yankee has expressed a interest in utilizing rubblization in its decommissioning. The process as proposed involves (a) removing all equipment from buildings, (b) some decontamination of the building surfaces, (c) demolishing the above grade structures into concrete rubble, and (f) covering, regrading, and landscaping the site surface.

Milestones

- License Termination Plan review 11/00

Proposed Lead Committee

- ACNW already has the lead and has written a report (1-24-2000)

Proposed action

- ACNW stated in its report that it would continue to interact with the NRC in the development of this option.

3. Entombment

The SRM on SECY 96-068 that addressed DSI-24 requested a NRC staff analyses as to whether they view entombment as a viable option. The staff stated in SECY 98-099 that consideration of entombment as a viable option has merit. In SECY 99-187 the staff stated that they believe that entombment can be a safe and viable option for many situations. The staff based this conclusion in part on PNNL assessment. The staff has conducted a workshop (12/99) during which they solicited stakeholder views.

Milestones

- Staff paper providing recommendations to the Commission 6/00

Proposed Lead Committee

- Areas to be addressed are in the ACNW area of expertise and traditional responsibility. ACRS members with operating reactor expertise could be involved.

Proposed Action

- Review staff paper and report to the Commission. Stakeholder input should be sought on controversial issues.

4. Decommissioning criteria for West Valley

The NRC staff is developing decommissioning criteria for use by DOE for the West Valley Demonstration Project and for any follow-up licensing activities.

Milestones

- SECY proposing a decommissioning criteria policy statement to Commission for approval 8/30/00
- Issue Policy Statement in FR 11/30/00
- Approve specific criteria for West Valley site TBD

Proposed Lead Committee

- Areas to be addressed an in the ACNW area of expertise and traditional responsibility.

Proposed Action

- Review the Policy Statement and specific criteria for the West Valley site

5. Site Decommissioning Management Plan

The Site Decommissioning Management Plan (SDMP) was developed and submitted to the Commission on March 29, 1990 (SECY-90-121) There are now 26 SDMP sites (proposed 23 in FY2001, 10 in FY2002, and 9 in FY2003)

Milestone

- DandD pilot to evaluate adequacy of screening criteria TDB
- ACNW visit to a SDMP site TBD

Proposed Lead Committee

- ACNW already has the lead

Proposed Action

- Discuss DandD pilot with the NRC staff and visit a selected SDMP site. Object of the site visit would be for ACNW to have a opportunity to familiarize itself with materials site decommissioning field experience and engage in public outreach.
- Shortly after the December 1999 ACNW meeting Richard Major distributed a package with reviews of 6 decommissioning reviews for materials sites. The ACNW should decide if they need to be briefed by the NRC staff.

6. Standard Review Plan for Decommissioning

The NMSS staff is developing a SRP for decommissioning. The document was provided to the ACNW in August, 1999. Assignments were subsequently made to members.

Milestones

- Issue dose modeling SRP 7/00
- Issue SRP 7/00

Proposed Lead Committee

- ACNW already has the lead

Proposed Action

- Review status of members work during the March 2000 ACNW meeting and decide on course of action

7. Pilot for performing decommissioning of a materials site without the submittal of a decommissioning plan

This activity implements the Commission's direction under DSI-9 to initiate a pilot study for decommissioning without the submittal of a decommissioning plan and providing a regulatory framework for encouraging lower cost decommissioning waste disposal options

Milestones

- Status report to the Commission 1/01

Proposed Lead Committee

- ACNW has the lead

Proposed Action

- ACNW should stay informed and make a decision as to if it should review this topic in early FY2001

8. NRC interactions with EPA and ISCORS to resolve issues of mutual concern

Topics addressed in these ongoing interactions include risk harmonization unnecessary duplication of regulatory requirements, mixed waste, recycling, decommission, cleanup, and sewer reconcentration.

Milestones

- Ongoing activity

Proposed Lead Committee

- Areas to be addressed are in the ACNW area of expertise and traditional responsibility

Proposed action

- ACNW should stay generally informed and involve itself only if the Commission requests its involvement or if a related issue arises within the context of ACNW review of some other topic. "Risk Harmonization" is a Second Ten Priority item on the ACNW's CY2000 Action Plan

9. RES work related to decommissioning issues

The work involves code and model development and some data acquisition. (See attachment)

Milestones

- Provide PC version of SEDSS that will implement DandD screening methodology and 1-D flow and transport groundwater pathway 5/00

- Update MARSSIM to incorporate public comments following 2-year testing period 7/00
- Verify and validate testing of 4 SIGHT 10/00
- Develop a probabilistic version of RESRAD and publish NUREG/CR 11/00
- Develop probabilistic version and DandD and publish NUREG/CR 11/00
- Provide draft technical report on test applications of methodology for selecting and testing conceptual models with respect to a specific site 2/01
- Provide PC version of SEDSS with multi-dimensional groundwater pathways 3/01

Proposed Lead Committee

- ACNW already has lead
-

Proposed Action

- ACNW should continue to stay informed as to the progress of the staff's work and continue to review this work in the context of its annual RES-sponsored research review.

Activities for which ACRS ACNW review is not recommended - documents will be given to lead committee member for information

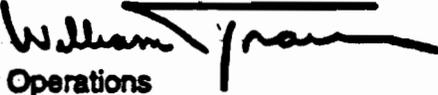
1. Decommissioning Project Manager's Handbook
2. NUREG-1628, "Decommissioning Questions and Answers."
3. Revisions to IMG 2561, "Decommissioning Inspection Program" and other decommissioning inspection procedures.
4. Resident Inspector Training and guidance for decommissioning
5. Guidance related to evaluating decommissioning cost and establishing financial indemnity.
6. Guidance on FSAR conversion often permanently ceasing power operation.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 24, 2000

MEMORANDUM TO: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield

FROM: William D. Travers 
Executive Director for Operations

SUBJECT: INFORMATION FOR THE COMMISSION ON THE NUCLEAR ENERGY
INSTITUTE PROPOSAL CONCERNING NUCLEAR POWER PLANT
DECOMMISSIONING RULEMAKING

The purpose of this note is to inform the Commission that the NRC staff has received the attached letter from the Nuclear Energy Institute (NEI), dated April 3, 2000. In its letter, NEI requests NRC restructure its ongoing decommissioning rulemaking efforts discussed in SECY-99-168. Specifically, the letter asks NRC to accelerate the planned regulatory improvement effort (comprehensive review of all NRC regulations to identify and modify decommissioning rules as required, possibly relocating them to a separate 10 CFR section) and combine this effort with the integrated rulemaking plan (single rulemaking to address emergency preparedness, safeguards, insurance, backfit rule, and operator staffing and training). It is NEI's expectation that the combined effort would be completed in about 24 months.

The staff is now reviewing the NEI proposal and we anticipate meeting publicly with NEI in early May to discuss the request in greater detail. Issues that must be considered include:

- a) technical uncertainties in determining the applicability of some regulations and the potential to delay the overall schedule,
- b) impact versus benefit of delaying the integrated decommissioning rulemaking,
- c) plausibility of a 2-year start-to-finish rulemaking schedule considering available resources and significant technical and policy issues likely to be encountered, and
- d) public stakeholder input on the proposed acceleration of efforts.

CONTACT: David J. Wrona, NRR/DLPM/LPD4
415-1924

The Commissioners

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If the staff develops a position different from that approved by the Commission in the Staff Requirements Memorandum dated December 21, 1999, for SECY-99-168, we will provide appropriate recommendations to the Commission for approval by May 19, 2000.

Attachment: NEI letter on Improving Decommissioning Regulations for Nuclear Power Plants

cc: SECY
OPA
OGC
CFO
OE
OCA
CIO

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April 3, 2000

**Mr. Samuel J. Collins
Director**

**Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop O-5 E7
Washington, DC 20555-0001**

SUBJECT: Improving Decommissioning Regulations for Nuclear Power Plants

Dear Mr. Collins:

The Commission endorsed two rulemaking initiatives to improve decommissioning regulations in response to a staff proposal in SECY-99-168. The staff envisioned one rulemaking would integrate and risk inform emergency preparedness, insurance, safeguards, and other areas amenable to risk insights. A parallel rulemaking would reconstitute sections of Part 50 that should apply to decommissioning plants. NEI proposes that these two rulemakings be combined. We would expect this decommissioning rulemaking to take about 24 months—the same period anticipated to risk inform Part 50 for operating facilities.

Although a single rulemaking would require more industry resources in the short term, we would be willing to make a commitment to support such an effort because of the benefits that are achievable. Consistency, consolidation of decommissioning issues, and a single, focused NRC management review are some of the benefits. In mid-April, we will submit comments on the risk study, including policy recommendations for use of the study and recommendations for a new subpart to Part 50 on decommissioning.

An additional point for consideration is the benefit that a single rulemaking would have in avoiding confusion on the part of stakeholders, thereby achieving more focused and consistent feedback and comments. We also believe one rulemaking would be more efficient because of the resource savings for NRC and the industry in developing and providing input to one rulemaking.

A single, well-focused effort completed in about two years has merit. We would like to discuss our views regarding the benefits and feasibility of this proposal. We look

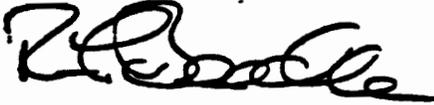
ATTACHMENT

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Mr. Samuel J. Collins
April 3, 2000
Page 2

forward to working with the licensing project management staff. To set up a meeting, please contact me or Lynnette Hendricks (202-739-8109 or bh@nei.org).

Sincerely,



Ralph E. Beedle

c: John A. Zwolinski, Deputy Director, Div. of Licensing Project Management, NRR

Prepared for Internal Committee Use Only

R. Seale
J. Barton
M. Bonaca
J. Sieber
R. Uhrig

During the March 2000 Planning and Procedures Subcommittee I was given the job of developing a proposal for ACRS interaction with the industry. We did not discuss the ground rules to any great extent but I attempted to keep my proposal in line with ACRS's current workload and resource limitations. I am also suggesting that for whatever we end up doing, we be sensitive to having the involvement of groups like UCS or Public Citizen. I would be inclined to avoid long meetings to which multiple industry organizations were invited. By my thinking we want to hear what the various industry representatives have to say without the pressures of confronting and/or accommodating other industry viewpoints in a public meeting.

What I am suggesting is as follows:

- (1) Schedule a discussion with senior NEI representatives and a few NEI Board Members (who would be selected by NEI) during a ACRS meeting in the near future. Industry trends, agenda, and regulatory needs could be discussed. The NEI staff offered us such a meeting during this and last year's self assessment interviews.
- (2) Plan regular attendance by members and ACRS staff at industry or professional society workshops and meetings where the agenda suggests the useful information as to the industries broader regulatory concerns would be obtained. (An example of this type of activity would be R. Uhrig's attendance at the ANS Amelia Island meeting.) I have asked NEI staff to send me the list of whatever NEI workshops and NEI meetings of this type are currently planned. I understand that INPO has a CEO's annual meeting to which the NRC Commissioners are invited to attend. If you are interested I can get more information on this INPO meeting. (John Barton recommends that either the ACRS

Chairman or Vice Chairman attend.) A more comprehensive of workshops and meetings could be developed if ACRS want to pursue this kind of attendance.

- (3) Continue to have our annual visit to a Region Office and to a licensee's plant. This would provide another opportunity for discussion of Region Office and licensee insights and concerns.
- (4) One or two ACRS members could make a short visit to a plant, without the level of preparation that goes into our annual visit to a Region office and a plant. We would notify the EDO and the Region Office of our visit but not ask for this level of support that we get for our annual visit. These kinds of visits were included as possible members' activities in the Adopted Plant program. (John Barton believes that these meetings would not provide benefits consistent with the ACRS and Region and licensee effort that would be required.)
- (5) We will be making site visits to plants for which the licensee has submitted a License Renewal Application. These visits would provide another opportunity for discussion of that licensee's insights and regulatory needs.
- (6) There was some discussion of having meetings with INPO. I would like to talk more with you as to what could be done in this regard. My sense is that INPO will be less accessible than NEI.

I will give you each a call.

Dick Savio



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

May 2, 2000

MEMORANDUM TO: William D. Travers
Executive Director for Operations

FROM: John T. Larkins, *John T. Larkins*
Executive Director
Advisory Committee on Reactor Safeguards
Advisory Committee on Nuclear Waste

SUBJECT: DRAFT MEMORANDUMS OF UNDERSTANDING BETWEEN
THE EDO AND THE ACRS AND THE ACNW

In a memorandum dated April 14, 2000, I provided comments on the revised EDO Procedures Manual and also committed to provide the draft Memorandums of Understanding (MOUs) between the ACRS and ACNW and Executive Director for Operations. Enclosed are the draft MOUs, which are being forwarded to you for comment and currently are being reviewed by both the Chairmen of the ACRS and ACNW. We are anticipating only minor comments from the ACRS and ACNW and should be able, after your review, to finalize these agreements.

Previously, the MOU's were signed by the respective Committee Chairmen, however, this agreement is on procedural matters, and I believe appropriate for my signature. Subsequent to getting the ACRS and ACNW Chairmen to agree to this change, we will revise the MOUs after your review. There may be a need for some discussion on these MOUs after your review, and I would be more than willing to discuss this with you at your convenience.

Attachments:
MOUs dated May 1, 2000 for ACRS and ACNW

cc: J. Blaha, EDO

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MEMORANDUM OF UNDERSTANDING

PARTIES: Advisory Committee on Reactor Safeguards (ACRS) - ACRS Chairman
Nuclear Regulatory Commission Staff - Executive Director for Operations (EDO)

SUBJECT: ACRS REVIEW AND COMMENT ON NUCLEAR SAFETY MATTERS

PURPOSE:

The purpose of this memorandum is to establish procedures for ACRS and NRC interaction in the ACRS review of nuclear safety matters under development by the NRC staff. This memorandum is to:

- Specify those matters that are within the purview of the ACRS.
- Establish the processes which will be used to keep the ACRS informed of matters within its purview.
- Establish procedures for ACRS review of matters within its purview at a sufficiently early stage to permit effective and efficient interaction.
- Provide guidance which will enable the ACRS and the NRC staff to establish plans and schedules that satisfy the needs of the ACRS, the NRC staff, and the Commission.

These procedures facilitate the NRC staff and ACRS interactions. Deviations from these procedures may at times be needed to carry out the NRC's mission. When this occurs, the procedures can be altered consistent with the needs of the NRC and the ACRS. Such changes will be implemented after being mutually agreed upon by the EDO and the ACRS/ACNW Executive Director.

AREAS WITHIN THE ACRS SCOPE OF RESPONSIBILITY

The scope of ACRS responsibility encompasses matters relating to the following parts of NRC's regulations (found in Title 10 of the Code of Federal Regulations)

- Part 20 - Standards for Protection Against Radiation
- Part 21 - Reporting of Defects and Noncompliance
- Part 26 - Fitness for Duty Programs
- Part 50 - Domestic Licensing of Production and Utilization Facilities
- Part 52 - Early Site Permits; Standard Design Certification; and Combined Licenses for Nuclear Power Plants

- Part 54 - Requirements for Renewal of Operating Licensees for Nuclear Power Plants
- Part 70 - Domestic Licensing of Special Nuclear Material
- Part 72 - Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste
- Part 73 - Physical Protection of Plants and Materials
- Part 76 - Certification of Gaseous Diffusion Plants
- Part 100 - Reactor Site Criteria

Regulatory activities that are within the ACRS scope of responsibility include:

Reactor safety-related policy matters and rules
 Reactor safety-related regulatory guides and other regulatory guidance
 Prioritization and resolution of generic safety issues
 License applications and applications for license renewals
 Risk-informed and performance-based regulation
 NRC sponsored research
 Reactor transient and accident analysis code certification
 Reactor licensee performance assessment and the analysis of plant operating experience
 Regulatory burden reduction initiatives
 Development of regulatory requirements associated with the use of new technology

NRC STAFF/ACRS COORDINATORS

NRC staff contacts will be established in NRR, RES, and NMSS to coordinate the provisions of this MOU for their office. An individual from the OEDO will be assigned the overall responsibility for coordinating this MOU for EDO offices. Meetings with the OEDO coordinator will be scheduled before each ACRS meeting during which the preparation of ACRS agendas will be discussed. The NRR, RES, and NMSS contacts will attend these meetings, as needed. The ACRS staff engineer supporting the ACRS Subcommittee that has the responsibility for the matter under review by the ACRS will normally serve as the ACRS staff contact for day-to-day interactions on those matters of interest. The NRC staff coordinator for the responsible office will coordinate interactions with the ACRS staff for that office. This does not preclude necessary interaction between the responsible ACRS staff engineer and the NRC staff individual who has the day-to-day responsibility for the matter under ACRS review, as long as the office coordinator is kept apprized of any decisions made

EARLY INTERACTION AND SELECTION OF MATTERS FOR THE ACRS REVIEW

The EDO will take necessary steps to ensure that matters requiring ACRS consideration are identified in the early stages of development and that sufficient time is allowed to permit effective and efficient review by the ACRS. Accordingly, when a safety matter, in an area of ACRS purview, is under consideration by the NRC staff, the cognizant NRC staff office, through the NRC staff coordinator, will inform the ACRS of the anticipated staff action (e.g., proposed rulemaking, issuance of a regulatory guide, or issuance of a Commission paper) while the basic requirements are being formulated. This will be accomplished through discussions between the NRC staff coordinators and the cognizant ACRS staff and by adding the anticipated staff action, with an appropriate description of the activity, to the list of proposed ACRS agenda items provided in the EDO's monthly memorandum on proposed agenda items for the ACRS and the ACNW. The ACRS will inform the cognizant NRC staff office and/or the EDO's office on a timely basis as to whether it intends to review a specific matter. Decisions as to whether to review a specific matter will be made in accordance with Commission guidance, the needs of the EDO, and the recommendations of the responsible ACRS Subcommittee Chairman and the ACRS Planning and Procedures Subcommittee.

The ACRS will sometimes take up a matter for review on its own initiative. The ACRS will inform the EDO and the cognizant staff office when these activities are initiated and will coordinate these activities with the responsible NRC staff

ESTABLISHING A SCHEDULE FOR THE ACRS REVIEW

If the ACRS decides to review a specific matter, the review will be performed prior to a Commission decision on the matter so that the Commission can have the benefit of the Committee's advice. When the EDO has the authority for making the regulatory decision, the ACRS review will be performed prior to the EDO making this decision. When a proposed regulatory action is to be published for public comment, the ACRS may review the matter both before and after public comment, as is appropriate for the particular case. There may be circumstances in which the ACRS will prefer to defer its review of a specific matter until after public comments have been received and addressed by the staff. In such cases, the EDO will be notified by the ACRS/ACNW Executive Director.

The cognizant NRC staff office will ensure that schedules for the development of a specific matter include sufficient time (normally about 60 days) for ACRS review prior to the date by which ACRS comments are desired. The documents which the ACRS needs for a full Committee discussion will normally be provided to the ACRS at least four weeks prior to the scheduled full Committee discussion. When the needed documents cannot be provided at least four weeks prior to the Committee discussion, the discussion will only be scheduled after agreement by the EDO and the ACRS/ACNW Executive Director. Documents needed for discussion of a matter at a Subcommittee meeting will be provided no later than two weeks prior to the Subcommittee meeting. Absent some extraordinary need, the Subcommittee meeting will not be held if the documents cannot be provided two weeks prior to the meeting. Exceptions will be made only with the agreement of the EDO, the ACRS/ACNW Executive Director, and the cognizant Subcommittee Chairman. When the documents are of such a nature as to preclude adequate Committee review in four weeks (or Subcommittee review in

two weeks), the ACRS/ACNW Executive Director will consult with the EDO and establish other arrangements.

When, for whatever reason, a choice must be made between timely submission of documents to the Commission or submission first for ACRS review, the EDO will consult with the ACRS/ACNW Executive Director and the Secretary of the Commission. It is expected that this will occur only in very unusual circumstances and that in these cases the Commission will make the decision as to the appropriate course of action.

RESOLVING ACRS COMMENTS

ACRS comments will be forwarded to the Commission or to the EDO, as appropriate, with copies to the cognizant NRC staff contact. The NRC staff contact will ensure that copies are provided to other NRC staff members, as appropriate.

The EDO will respond to ACRS comments in a timely manner. On all matters except those where Commission priorities or safety concerns demand action to the contrary, the EDO will respond to ACRS comments on a specific matter prior to taking final action on that matter, or prior to submitting it for Commission approval. Commission papers, if any, should address all ACRS comments including those not endorsed by the staff. The EDO may elect to consider ACRS comments on proposed or draft documents (e.g., proposed rules, draft regulatory guides) following the close of the public comment period within the context of resolution of public comments.

SUBMITTING DOCUMENTS FOR ACRS REVIEW/INFORMATION

Twenty copies of documents related to a specific matter will be provided to the ACRS by the NRC staff contact/project engineer with a memorandum addressed to the ACRS/ACNW Executive Director requesting appropriate ACRS action. When sending a specific matter to the ACRS for review, the cognizant staff office (NRC staff contact) will ensure that the ACRS is provided with copies of other related documents, public comments and the staff's resolution of these comments, and CRGR comments, as appropriate. The cognizant staff will also include any directly related differing professional opinions and/or differing professional views.

Five copies of documents related to a specific matter will also be provided to the ACRS for information by the NRC staff contact/project engineer at the following stages, when applicable, with a memorandum addressed to the ACRS/ACNW Executive Director, indicating that they are sent for ACRS information:

- When it is sent to the Federal Register to be published for public comment.
- When it is sent to the Federal Register to be published as an effective document.

The cognizant ACRS staff engineer and other ACRS/ACNW staff designated by the ACRS/ACNW Executive Director will be allowed "viewer" access rights in ADAMS for all documents within the purview of the ACRS when the documents are placed in the concurrence process.

[Note: ADAMS is designed to replace the transmittal of multiple paper copies of documents and at some point the requirements stated above can be modified, as appropriate. We will have to discuss what policy we are going to have for very large documents and documents which use color for graphs and charts, etc.]

DEALING WITH PREDECISIONAL AND PROPRIETARY DOCUMENTS

In those instances in which a safety-related matter is considered predecisional and is not otherwise a matter which is exempt from the open meeting requirements of the Federal Advisory Committee Act, cognizant NRC staff will participate in open ACRS Subcommittee or full Committee meetings considered necessary to such reviews. In those cases where discussion of controlled internal documents, including predecisional documents, is required during an open meeting, approval of the cognizant office director or regional administrator shall be obtained by the office transmitting the document to the ACRS. ACRS meetings can be closed for review of proprietary material under the exemptions allowed by the Federal Advisory Committee Act and external stakeholders can make such requests for closed meetings. When requests of this type are received by the ACRS, the ACRS staff may need the assistance of NRC staff technical experts on an expedited basis to make accurate judgments as to what information should be protected.

To provide for protection in accordance with the provisions of the Freedom of Information Act, documents transmitted to the ACRS by the NRC staff that are considered to be predecisional or proprietary will be identified as such by an appropriate marking and in the accompanying transmittal letter.

(Date)

William Travers
Executive Director for Operations

(Date)

Dana Powers, Chairman
Advisory Committee on Reactor Safeguards

From: "Powers, Dana A" <dapower@sandia.gov>
To: "JTL@nrc.gov" <JTL@nrc.gov>, "HJL@nrc.gov" <HJ...>
Date: Mon, Apr 17, 2000 1:24 PM
Subject: MAY PLANNING AND PROCEDURES SUBCOMMITTEE

I have been thinking about what we should do at the May planning and procedures subcommittee aside from the usual look at work loads and schedules. Some topics that I think should arise before the Planning and Procedures subcommittee include:

1. ACRS Self Assessment: we need to make a "do pass" recommendation to the full Committee.

- are we happy with the matrix?
- are we happy with the text?
- have we done the things the Commissioners (especially McGaffigan and Dicus) have asked?
- how are we doing so far this year? Are we over-focused on TH and underfocused on PRA?

2. What are the outstanding obligations to the Commission based on SRMs?

- do we have approaches that will yield satisfactory solutions to these obligations or will they be last minute affairs?
- should we focus on what staff is doing and "grade" it or should we focus on some of the harder issues such as what to do with the "Backfit Rule" in developing risk informed regulations?

3. Review of our performance on the issue of Low Power and Shutdown Risk Studies.

- how should we approach this issue in the future?

4. Proposed approaches to address the Research report for this year?

5. What impacts does ACRS want to have for the year?

- should we build upon the work praised recently by one of the Regions?
- should we try to redefine the Research direction?
- should we continue to pursue regulatory coherency in view of added comments to SGPS letter?

6. License Renewal Workload

- should we set up two subcommittees to alternate on this work load?

Dana