



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

June 6, 2003

The Honorable Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Diaz:

SUBJECT: SUMMARY REPORT - 502nd MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS, MAY 8-9, 2003
AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 502nd meeting, May 8-9, 2003, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports:

REPORTS:

The following reports were issued to Nils J. Diaz, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Vessel Head Penetration Cracking and Reactor Pressure Vessel Degradation, dated May 16, 2003
- Improvement of the Quality of Risk Information for Regulatory Decisionmaking, dated May 16, 2003
- Draft Final Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping

HIGHLIGHTS OF KEY ISSUES

1. Vessel Head Penetration Cracking and Degradation

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding pressurized water reactor (PWR) vessel head penetration (VHP) cracking and reactor pressure vessel degradation. On May 20, 2002, the NRC Executive Director for Operations had appointed an independent task force to assess the lessons-learned from the degradation of the reactor vessel head at Davis-Besse. The scope of the assessment included the reactor oversight process, regulatory processes, research activities, international practices, and NRC generic issues process. As a result of the lessons-learned task force (LLTF) recommendations, four action plans were developed. These are stress corrosion cracking; operating experience; inspection, assessment, and project management; and barrier integrity.

The NRC issued a series of Bulletins and an Order (EA-03-009- February 2003) to address the various materials degradation phenomena that have occurred in PWR VHPs. This Order mandated interim inspection requirements. This matter was also discussed with the EPRI Materials Reliability Program (MRP) during the 500th ACRS meeting (March 6-8, 2003), and with the MRP and NRC staff during a joint Materials and Metallurgy and Plant Operations Subcommittees meeting (April 22-23, 2003).

Committee Action

The Committee issued a report to NRC Chairman Diaz on this matter dated May 16, 2003, concluding that the LLTF action plans define the work needed to provide a sound technical basis for assessing industry's development of a proactive life management methodology for materials degradation in PWR vessel head penetrations. However, these action plans need to be augmented in some areas. In addition, the Committee recommended that the NRC staff must have the independent capability to analyze the required data collected from other organizations.

2. Proposed Revisions to Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping

The Committee met with representatives of the NRC staff to discuss the draft final Regulatory Guide 1.178, "An Approach for Plant Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping," and associated Standard Review Plan Section 3.9.8. The Committee discussed changes to Regulatory Guide 1.178 since it was issued for trial use in September 1998. The most important substantive changes are additional

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4. Subcommittee Report on the Revised Application for the Mixed Oxide (MOX) Fuel Fabrication Facility

The Chairman of the Reactor Fuels subcommittee summarized the subcommittee meeting on the Mixed Oxide Fuel Fabrication Facility. Duke Cogema Stone and Webster, and the NRC staff discussed the open items related to criticality, chemical safety (red oil and hydroxylamine nitrate), fire protection, and confinement ventilation.

5. Subcommittee Report on the Integrated Industry Initiating Event Performance Indicator

The Acting Chairman of the Reliability and Probabilistic Risk Assessment subcommittee summarized the subcommittee meeting on the integrated initiating event performance indicator (PI). The NRC staff discussed the status of the development of a PI for initiating events as a part of the Industry Trends Program.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the response from the EDO dated April 29, 2003, to the ACRS report dated March 14, 2003, concerning the license renewal application for the Peach Bottom Atomic Power Station, Units 2 and 3.

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

- The Committee considered the response from the EDO dated April 29, 2003, to the ACRS report dated March 13, 2003, concerning the reactor oversight process.

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

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from April 10, 2003, through May 7, 2003, the following Subcommittee meetings were held:

- Reactor Fuels Subcommittee - April 21, 2003

The Subcommittee reviewed the Duke Cogema Stone and Webster construction application request resubmittal for a mixed oxide (MOX) fuel fabrication facility.

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- Materials and Metallurgy Subcommittee - April 22-23, 2003

The Subcommittee reviewed NRC inspection requirements and guidance, Wastage Research, and the EPRI Materials Reliability Program and industry efforts related to vessel head penetration cracking and reactor pressure vessel head degradation.

- Safeguards and Security Subcommittee - April 24, 2003

The Subcommittee heard presentations from Commissioner McGaffigan and representatives of the NRC staff and the nuclear industry. This meeting was closed to public attendance pursuant to 5 U.S.C. 552b(c)(1) to protect information classified as national security information.

- Reliability and Probabilistic Risk Assessment Subcommittee - May 7, 2003

The Subcommittee reviewed the integrated industry initiating event indicator as a part of the Industry Trends Program.

- Planning and Procedures - May 7, 2003

The 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 MATTERS FOR THE ATTENTION OF THE EDO

- The Committee plans to review the draft report of the Operating Experience Task Force when it is issued in the fall.
- The ACRS Subcommittee on Reliability and PRA plans to hold a meeting in Fall 2003 to discuss the status of resolution of public comments on the proposed 10 CFR 50.69, Draft Regulatory Guide DG-1121, and Revision 1 of the NEI document NEI 00-04.

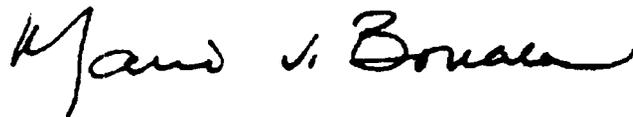
The Honorable Nils J. Diaz

PROPOSED SCHEDULE FOR THE 503rd ACRS MEETING

The Committee agreed to consider the following topics during the 503rd ACRS meeting, to be held on June 11-13, 2003:

- Workshop on Safety Culture
 - Collective Understanding of Safety Culture
 - Attributes of Safety Culture
 - Conclusions and Outcome of the Workshop
- Update to Generic License Renewal Guidance Documents
- Subcommittee Report on the Fort Calhoun License Renewal Application
- Proposed Strategy for Preparing the 2004 ACRS Report on the NRC Safety Research Program

Sincerely,



Mario V. Bonaca
Chairman

CERTIFIED

Date Issued: 6/24/2003
Date Certified: 7/3/2003

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REPORTS:

The following reports were issued to Nils J. Diaz, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

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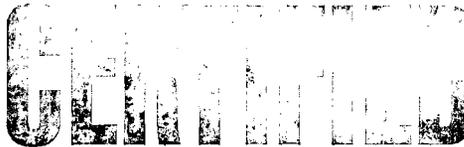
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REPORTS (continued)

- Draft Final Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping

APPENDICES

- I. *Federal Register Notice*
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MINUTES OF THE 502nd MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
May 8-9, 2003
ROCKVILLE, MARYLAND

The 502nd meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on May 8-9, 2003. Notice of this meeting was published in the *Federal Register* on April 21, 2003 (65 FR 19583) (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 meeting was open to public attendance. 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 is available in the NRC's Public Document Room at One White Flint North, Room 1F-19, 11555 Rockville Pike, Rockville, Maryland. Copies of the transcript are available for purchase from Neal R. Gross and Co., Inc. 1323 Rhode Island Avenue, NW, Washington, DC 20005. Transcripts are also available at no cost to download from, or review on, the Internet at <http://www.nrc.gov/ACRS/ACNW>.

ATTENDEES

ACRS Members: ACRS Members: Dr. Mario V. Bonaca (Chairman), Dr. Graham B. Wallis (Vice Chairman), Dr. George E. Apostolakis, Dr. F. Peter Ford, Dr. Thomas S. Kress, Mr. Graham M. Leitch, Dr. Dana A. Powers, Dr. Victor H. Ransom, Dr. William J. Shack, and Mr. John D. Sieber. Mr. Stephen L. Rosen did not attend this meeting. 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. Mario V. Bonaca, 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. Vessel Head Penetration Cracking and Degradation (Open)

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

Dr. Peter Ford, ACRS, stated that the purpose of this meeting was to hear presentations by the NRC staff regarding pressurized water reactor (PWR) vessel head penetration (VHP) cracking and reactor pressure vessel degradation. This matter was discussed with members of the EPRI Materials Reliability Program (MRP) at the 500th ACRS meeting (March 6-8, 2003), and with the MRP and NRC staff during a joint meeting of the Materials and Metallurgy and Plant Operations Subcommittees on April 22-23, 2003. On May 20, 2002, the NRC Executive Director for Operations appointed an independent task force to assess the lessons-learned from the degradation of the reactor vessel head at Davis-Besse. The scope of the assessment included the reactor oversight process, regulatory processes, research activities, international practices, and NRC generic issues process. As a result of the lessons-learned task force (LLTF) recommendations, four action plans were developed. These were stress corrosion cracking; operating experience; inspection, assessment, and project management; and barrier integrity.

Dr. Allen Hiser, NRC/NRR, provided an update on the status of pressure vessel head inspections, and in particular the background regarding the findings over the last several years and the NRC actions in response to those findings. One of the NRC follow-up actions to the Davis-Besse event was the formation of the LLTF. The LLTF conducted an independent evaluation of the NRC's regulatory processes pertinent to the event in order to identify and recommend areas of improvement applicable to the NRC and industry.

The NRC issued a series of Bulletins (2001-01, 2002-01, 2002-02), and on February 11, 2003, the NRC issued an Order (EA-03-009), "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurizer Water Reactors," to deal with the various materials degradation phenomena that have been observed in PWR VHPs. The adequate protection basis is that the ASME code inspections are inadequate, and the reactor pressure vessel (RPV) head degradation and nozzle cracking pose safety risks if not promptly identified and corrected. The Order mandated interim inspections requirements that would be operative until revised inspection requirements could be defined in 10 CFR 50.55a. The following criteria was used in evaluating the RPV head susceptibility:

High—effective degradation years (EDY) greater than 12, OR experienced cracking in a penetration nozzle or J-groove weld; Moderate—EDY less than or equal to 12 and greater than or equal to 8, AND no previous inspection findings requiring classification as High; and Low—EDY less than 8 AND no previous inspection findings requiring classification as High. The inspections are to be performed using the following techniques and frequencies:

High category—RPV head and head penetration nozzle inspections every refueling outage (RFO) using bare metal visual (BMV) examination AND non-visual non-destructive examination (NDE) (e.g., ultrasonic testing with evaluation of interference fit leakage, or wetted-surface examination);

Moderate category—BMV and non-visual NDE at alternating RFOs;

Low category—BMV by next 2 RFOs (repeat every third RFO or 5 years), non-visual by 2008 (repeat every fourth RFO or seven years).

During each RFO, visual inspections shall be performed to identify potential boric acid leaks and verify the integrity of the affected area and penetrations. Some plants (Turkey Point, Calvert Cliffs 2, Farley 1, Millstone 2, St. Lucie, D.C. Cook, Indian Point 3, and Palo Verde) are requesting relaxations of the Order. It is anticipated that all plants will complete their inspections by year 2004.

Mr. Brendan Moroney, Office of Nuclear Reactor Regulation (NRR), and Mr. Douglas Kalinouski, Office of Nuclear Regulatory Research (RES), described the action plans that were developed to address the Davis-Besse LLTF recommendations. The LLTF report was published on September 30, 2002 and contained several recommendations. The report was reviewed by a team consisting of several senior managers appointed by the NRC Executive Director for Operations (EDO). A senior management report on the LLTF report was issued on November 26, 2002, and that report was forwarded to the Commission on January 3, 2003. NRR and RES were jointly tasked to complete these action plans. The staff discussed the stress corrosion cracking and the barrier integrity action plans.

The stress corrosion cracking action plan consists of Part I—Inspection requirements, worldwide data collection, evaluation of existing susceptibility models and inspection results, review of the EPRI materials reliability program and ASME efforts, and endorsement of code changes; Part II—Boric acid corrosion control (BACC) program, worldwide data collection, evaluation of bulletin responses and need for additional

regulatory action and review of code revisions; and, Part III—Inspection programs, guidance for periodic review of inservice inspection activities, timely periodic inspections of BACC programs, and assessing adequacy of BACC programs.

The barrier integrity action plan consists of Part I—leakage detection and monitoring requirements, develop basis for new leakage requirements, recommendations for improved leakage requirements, the incorporation of recommendations, as possible, and examine other barrier integrity requirements related to leakage; and, Part II—improved performance indicators (PIs), develop and implement advanced PIs, re-evaluate PIs based on reactor coolant system leakage changes.

Mr. William H. Cullen, Jr., described the RES' activities to address the control rod drive mechanism (CRDM) cracking issues. These activities include nickel-base Alloy cracking, boric acid corrosion of pressure boundary materials, and safety assessment of exposed cladding in the Davis-Besse cavity. Additional programs with expected relevant products include a program coordinated by the Japanese, heat-by-heat analysis of domestic plant CRDMs, stress analysis of CRDM penetrations, and the LLTF recommendations to review worldwide experience with Alloy 600 CRDMs. Currently, there is an on-going program at Argonne National Laboratory for stress corrosion cracking testing of Alloys 600, 182, 690 and 152 in boiling water reactors and pressurized water reactors.

Committee Action

The Committee issued a report to NRC Chairman Diaz on this matter dated May 16, 2003, concluding that the LLTF action plan define the work needed to provide a sound technical basis for assessing the industry's development. However, these action plans need to be augmented in some areas. In addition, the Committee recommended that the NRC staff must have the independent capability to analyze the required collected data from other organizations.

III. Proposed Revisions to Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping (Open)

[Note: Mr. Sam Duraiswamy was the Designated Federal Official and Mr. Michael Snodderly was the Cognizant Staff Engineer for this portion of the meeting.]

Dr. William Shack, the cognizant Committee member for this issue, introduced the topic. He said that risk-informed inservice inspection of piping has been one of the

success stories of risk-informed regulation by focusing on piping segments that are risk significant. He explained that the staff was before the Committee to discuss proposed revisions to Regulatory Guide (RG) 1.178, "An Approach for Plant Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping," and the associated Standard Review Plan (SRP) Chapter 3.9.8 for the review of risk-informed inservice inspection (ISI) of piping.

NRC Staff Presentation

The main presenters from the staff were Mr. Syed Ali, RES, Andrea Kiem and Stephen Dinsmore, NRR. Mr. Ali provided background information on RG 1.178 and SRP Chapter 3.9.8 and then Mr. Dinsmore discussed the proposed changes.

During the above discussions, the presenters and the ACRS Members made the following points:

- Mr. Ali said that most plants are designed and constructed to the ASME boiler and pressure vessel code. The ASME code requires different levels of volumetric or surface examinations, depending upon the class of piping. The regulation also allows the use of an alternative methodology for in-service inspection and this is the provision under which the risk-informed inservice inspection (ISI) has been implemented. The staff has received 71 risk-informed ISI submittals and 28 submittals are anticipated.
- Mr. Leitch asked what was the typical scope of an application. Mr. Ali said it was Class I piping.
- Mr. Ali stated that the staff has approved two methodologies. One was developed by EPRI and one by the Westinghouse Owners Group. Dr. Apostolakis asked if the two methodologies yielded the same results. Mr. Ali said that they have not had the opportunity to apply both methodologies to the same plant. Mr. Ali said that industry has not volunteered and the staff has not had the resources to do the comparison. The staff has seen that, in general, the Westinghouse methodology results in less inspections than the EPRI methodology.
- Dr. Shack asked how many of the template submittals had been audited. Mr. Ali said four or five. Mr. Dinsmore added that they have not been auditing applicants unless they see something unusual. For example, the last audit was

performed because there was a substantial change in core damage frequency (CDF) and large early release frequency from the individual plant examination.

- Mr. Leitch asked what was meant by the phrase “super pipe.” Mr. Ali responded that a “super pipe” meets certain conditions and, if those conditions are met, than breaks do not have to be postulated. There are about seven requirements relating to the stresses in that piping, fatigue usage factors, construction, welding of the piping to the supports, and minimized welding. Another requirement of that piping was a 100 percent ISI of that piping, in order for the utility to not have to postulate breaks in that region. Both topical reports allow the application of the risk-informed methodology to “super pipes.”
- Mr. Leitch asked if we found any areas where we should be doing additional inspections. Mr. Ali responded in the affirmative. He went on to say especially those plants that have applied the program full scope, meaning Class I, II, and III piping.
- Dr. Apostolakis asked why the regulatory guide was not issued as Revision 0 instead of trial use. Mr. Dinsmore explained that the trial use regulatory guide actually states that it does not establish any final staff positions and may be revised without having to consider the back fit rule.
- Mr. Ali explained that the Westinghouse methodology uses importance measures while the EPRI methodology uses both important measures and CDF cut off.
- Mr. Dinsmore mentioned that the proposed section 10 CFR 50.69, “Risk-Informed Categorization and Treatment of Structures, Systems, and Components,” provides an additional method for risk-informed categorization of piping. Mr. Dinsmore said that the staff would take a look and make sure they were consistent. The Committee suggested that this may be an issue to consider as part of the staff’s coherence program
- Dr. Powers asked about international use of risk-informed ISI. Ken Balkey of Westinghouse said he was aware that the French have developed their own methodology. Mr. Balkey said that Spain is following very closely to the NRC regulations and that they use the ASME code directly. Other countries in Europe are still evaluating either method for application. There are trial applications in Switzerland and Sweden, where they have looked at both. The Japanese are

still deciding, and they have not made any movement towards a risk-based inspection effort. Korea has followed the lead of the United States and they are using that as the pilot for their plants.

- Dr. Powers asked what is the difference in the French methodology. Mr. Ali committed to looking into the differences and trying to find out what the French are doing.
- Mr. Leitch questioned if the risk-informed ISI program is approved for a 10-year interval. Mr. Ali answered in the affirmative.

Committee Action

The Committee issued a report to the Commission, dated May 16, 2003, on this matter. In its report, the Committee recommended that the draft final RG 1.178 and associated SRP Section 3.9.8 be issued. In addition, the staff should consider undertaking a study in which EPRI, Westinghouse Owners Group, and French methodologies are applied to the same piping system and the resulting inspection plans are compared to gain a better understanding of the impact of the different approaches.

IV. Operating Experience Program Effectiveness (Open)

[Note: Mrs. Maggalean W. Weston was the Designated Federal Official and Mr. Ralph Caruso was the Cognizant Staff Engineer for this portion of the meeting.]

Mr. John D. Sieber opened the session with a description of the Davis-Besse Lessons Learned Task Force (LLTF), which produced a report that was issued in September 2002. The report included recommendations to improve the collection and dissemination of operating experience. He noted that operating experience programs have existed for a long time, and have contributed to better regulation and better operation of the plants

Mr. Seiber recalled that at the Peach Bottom License Renewal presentation in March 2003, the Committee had inquired about the techniques the licensee and the staff used to factor operating experience into the evaluation of the plant's suitability for license renewal. At the meeting, the staff informed the Committee that it was going to convene a Task Force to investigate operating experience evaluation and dissemination, in accordance with the Davis-Besse LLTF recommendations. The presentation to the Committee today was intended to inform the Committee about the objectives and

attributes that the new Task Force had developed, and to seek additional suggestions for inclusion in the Task Force efforts.

Mr. Charles Ader, Chairman of the Task Force, began his presentation with a recapitulation of the relevant recommendations of the Davis Besse LLTF, which included:

- (1) Take steps to evaluate the agency's capability to retain operating experience information and to perform longer-term operating experience reviews;
- (2) Evaluate thresholds, criteria, and guidance for initiating generic communications;
- (3) Evaluate opportunities for additional effectiveness and efficiency gains stemming from changes in organizational alignments;
- (4) Evaluate the effectiveness of the Generic Issues Program;
- (5) Evaluate the effectiveness of the internal dissemination of operating experience to end users; and
- (6) Assess the scope and adequacy of requirements governing a licensee review of operating experience.

He presented an overview of the Operating Experience Task Force Charter, its Objectives, and the desired attributes. He explained that the Charter for the Task Force was only a small piece of the overall Davis-Besse LLTF action plan, which was issued on March 7, 2003. The Objective of the Task Force is

“...to evaluate the agency's reactor operating experience program and to recommend specific program improvements ... which addresses the recommendations of the Davis-Besse Lessons Learned Task Force...”

Mr. Ader explained that a number of different organizations and tools will be involved in the establishment of an operating experience clearinghouse, including RES, the accident sequence precursor database, contractors, and allegations reports. There has been some movement to consolidate a number of different databases that contain operating experience, but it has not yet been decided whether the information should be tightly integrated, or whether the flow of information among the different organizations and databases needs to be coordinated better. Dr. Wallis noted that this activity seemed to be similar to one that had been previously performed by the Office for the Analysis and Evaluation of Operational Data (AEOD). Mr. Ader responded that it could be said that the work of the Task Force does include a re-assessment of the separation of AEOD that had occurred several years ago.

Dr. Apostolakis asked what licensees do when they receive information from the NRC, or from industry that relates to operating experience. Mr. Ader replied that licensee response depended on the source of the information. In the case of formal notifications that require a response, such as a NRC Bulletin, a formal evaluation and response is required. Other, less formal notification methods are used, that do not require formal response. Dr. Bonaca noted that many licensees have formal requirements contained either in their licenses, or in other licensing basis documents, that require formal assessment programs to consider operating experience feedback.

Mr. Ader described the membership of the Task Force, and explained that it would report to a Steering Committee comprised of senior NRC executives. The approach of the Task Force will be viewed broadly, to include as many end users, from within the agency, as well as licensees, as possible. The first phase of its activities will be to identify desirable agency operating experience program objectives and attributes. Once that phase is complete, the Task Force will move forward to define the functional needs to meet the program objectives and attributes, perform gap and overlap analyses, and recommend specific program improvements and their bases.

The initial efforts to identify the objectives and attributes has been completed, and comments have been received from stakeholders. The proposed objectives include:

- (1) Ensure that operating experience is collected, evaluated, communicated and applied to enhance safety;
- (2) Ensure that operating experience is used to improve the effectiveness, efficiency, and realism of NRC decisions; and
- (3) Ensure that the public, Congress, and other external stakeholders are provided with timely information regarding operational experience, including actual or potential hazards to health and safety.

The proposed attributes include:

- (1) Clearly defined and communicated roles and responsibilities;
- (2) Efficient collection, storage, and retrieval of operating experience;
- (3) Effective screening of operating experience for follow-up evaluation;
- (4) Timely communication of operating experience to stakeholders for information or evaluation;
- (5) Timely and thorough evaluations of operating experience to identify trends, recurring events, or significant safety issues for appropriate follow-up actions;

- (6) Timely decisions on implementation and appropriate follow-up resulting from the review of operating experience; and
- (7) Periodic assessments of the operating experience program to determine its effectiveness and to identify needed improvements

The proposed objectives and attributes were provided to the Steering Committee on April 30, 2003, and a draft report to the Steering Committee recommending program improvement is planned to be issued on September 30, 2003, with a final report issued on November 30, 2003.

Dr. Apostolakis expressed agreement with the inclusion of probabilistic risk practitioners in the Task Force, and he asked whether one of the activities will be to consider how operating experience is factored into risk assessments. Mr. Ader replied that the Task Force would keep the Committee involved in its activities, and would note this comment. Mr. Seiber thought that the operating experience process seems to be focused on equipment failures, but not on operator errors, and he thought that it should not become equipment-centered, but should include operational behavior. Mr. Ader also noted this comment.

Dr. Wallis asked how the Task Force would address the issue of licensee follow-up, given that only a limited number of NRC communications required action. Mr. Ader was not sure how the Task Force would address this, and Mr. Leitch commented that it might include the licensee corrective action programs that every licensee has. Dr. Wallis emphasized his point with the observation that the Davis-Besse situation arose from a failure of the licensee to learn from its own experience. Mr. Gillespie commented that it might be possible to modify the inspection program to look at how licensees deal with this issue. He also noted that it will be important to provide operating experience information to inspectors in a way that it can be used effectively. Dr. Bonaca noted that all licensees have these programs in place – the question was how well they implemented them. The Committee further discussed ways in which licensee performance in implementing these programs could be used as a performance indicator.

Dr. Wallis then asked whether this program duplicated the activities of the Institute for Nuclear Power Operations (INPO), and whether the staff could work with INPO to coordinate the activities. The staff explained that institutional conflict-of-interest would preclude this sort of cooperation.

Dr. Powers closed the discussion by noting that it seems like many of the functions of AEOD seem to have disappeared since that organization was disbanded.

Committee Action

The Committee thanked the staff for bringing this matter to its attention at this early date, and noted that it would have time to consider the proposal over the summer. The Committee expects to receive the draft report of the Task Force in September, and will try to include a discussion of the report on a Committee agenda in the fall. The Committee emphasized the importance of follow-up action to verify the implementation of operating experience evaluation activities, and noted that this will be an area that it will focus on in the fall.

V. 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.]

- The Committee considered the response from the EDO dated April 29, 2003, to the ACRS report dated March 14, 2003, concerning the license renewal application for the Peach Bottom Atomic Power Station, Units 2 and 3.

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

- The Committee considered the response from the EDO dated April 29, 2003, to the ACRS report dated March 13, 2003, concerning the reactor oversight process.

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

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

The Committee heard a report from ACRS Chairman and the Executive Director, ACRS, regarding the Planning and Procedures Subcommittee meeting held on May 7, 2003. The following items were discussed:

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 April ACRS meeting were discussed. Reports and letters that would benefit from additional consideration at a future ACRS meeting were considered.

Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through July 2003 was addressed. The objectives were:

- Review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate;
- Manage the members' workload for these meetings;
- Plan and schedule items for ACRS discussion of topical and emerging issues.

2004 ACRS Report on the NRC Safety Research Program

The Committee recently completed its 2003 report (NUREG-1635, Vol. 5) on the NRC Safety Research Program. The focus of the report was on the "Advanced Reactor Research Infrastructure Assessment" document prepared by RES.

Dr. Powers has agreed to take the lead for preparing the 2004 ACRS report. Consistent with the Commission discussion, the 2004 report should cover all RES safety research programs. As suggested by the Committee at the April 2003 ACRS meeting, Dr. Powers has developed a proposed strategy for preparing the 2004 research report. It has been distributed to the members during the May meeting for comment.

Revised Subcommittee Structure

A proposed revision to the ACRS Subcommittee structure was provided to the members during the April ACRS meeting and requested comments by April 25, 2003. Comments received from Dr. Apostolakis, Dr. Powers, and Mr. Rosen were incorporated into the current revision. Significant changes to the Subcommittee structure include the following:

- Abolishment of Subcommittees

The Plant Systems Subcommittee has been abolished and the tasks of this Subcommittee have been assigned to the Plant Operations and the Human Factors Subcommittees. The Natural Phenomena Subcommittee has been abolished and the tasks of this Subcommittee have been assigned to Regulatory Policies and Practices and Reliability and PRA Subcommittees.

- Chairmanship Changes

- Dr. Powers, who has agreed to take the lead for preparing the 2004 ACRS report on the NRC Safety Research Program, becomes the Chairman of the Safety Research Program Subcommittee.
- Mr. Rosen will become the Chairman of the Human Factors Subcommittee. Dr. Powers, current Chairman, will remain as a member of this Subcommittee.

- Subcommittee Member Assignments

- Proposed changes to the Subcommittee membership were made to better balance the workload. These changes do not preclude a member from attending any subcommittee meeting.

The Planning and Procedures Subcommittee continues to evaluate the assignments and workload distributions for the members.

Safety Culture Workshop

During the April 2003 ACRS meeting, the Committee agreed to hold a Workshop on Safety Culture on June 12, 2003, to discuss initiatives related to assessing safety

culture and its impact on the safe operation of nuclear facilities. Dr. Apostolakis, Chairman of the Reliability and PRA Subcommittee, has the lead for this workshop. The Committee also decided to defer its report on Safety Culture until after this Workshop. A proposed schedule for this Workshop was discussed by the Planning and Procedures Subcommittee. Individuals and organizations who have been invited to participate in the Workshop are included in the proposed schedule.

Visit to Plant/Region I

During the April 2003 ACRS meeting, the members agreed to visit the Peach Bottom Nuclear Plant on Monday, June 9, 2003, and the Region I Office on Tuesday, June 10, 2003.

Staff Requirements Memorandum

Attached is the Staff Requirements Memorandum (SRM) resulting from the ACRS meeting with the NRC Commissioners on April 11, 2003. In the SRM, the Commission stated the following:

- The Commission appreciates the ACRS participation in multilateral meetings of nuclear regulatory advisory Committees, as appropriate. The Committee should consider including nuclear regulatory advisory Committees from other countries in future multilateral meetings.
- In the course of its routine activities of reviewing and advising the Commission on reactor issues, the Committee should explore and consider other international regulatory approaches. Where there are significant differences in regulatory approaches and requirements, the Commission should be informed.
- The ACRS is welcome to propose changing the frequency and nature of its review and evaluation of the NRC Safety Research Program so that it is most useful to the Commission.

Commission Decision on Risk Informing 10 CFR Part 50 (Option 3) and 10 CFR 50.46

The Commission's March 31, 2003, SRM on Risk Informing Changes to 10 CFR Part 50 (Option 3) and Recommendations on Risk Informing Changes to 10 CFR 50.46, directs the staff to redefine the design basis large-break loss-of-coolant accident (LOCA) in view of the apparent low risk associated with such events. The Commission

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asked the staff to provide the Commission with a comprehensive "LOCA failure analysis and frequency estimation" that is realistically conservative and amenable to decision-making subject to the comments and considerations noted in the SRM. Realistically conservative estimations, with appropriate margins for uncertainty, should be used. The Commission has asked for a rule change in March 2004.

During the April 2003 ACRS meeting, the Committee suggested that Drs. Shack and Wallis review the SRM and propose a course of action. Based on Mr. Snodderly's communication with the staff, we understand that the staff plans to submit a Commission paper prior to forwarding the proposed rule.

The staff still plans to conduct the expert elicitation in July 2003 to address the SRM issue that "the staff should conduct a practical reconciliation of LOCA frequency distributions by the (1) expert use of service-data, (2) probabilistic fracture mechanics (PFM), and (3) expert elicitation to converge the results." The Committee should consider hearing a briefing by the staff in July 2003 prior to the staff conducting the expert elicitation and provide feedback with regard to issues and questions to be raised in expert elicitation.

Proposed Rulemaking to Add New Section 10 CFR 50.69

In an SRM dated March 28, 2003, the Commission approved publishing a proposed rule and related draft regulatory guidance concerning the risk-informed categorization and treatment of structures, systems, and components, subject to several comments noted in the SRM.

The staff plans to issue the proposed 10 CFR 50.69 for public comment on May 16, 2003. The public comment period will end on July 30, 2003. The staff is willing to brief the ACRS Subcommittee on Reliability and PRA after NEI has completed Revision D to NEI 00-04 and the staff has incorporated, as appropriate, NEI guidance into DG-1121. This is expected to occur in the fall of 2003. The schedule for publishing the final 10 CFR 50.69 is August 2004. The staff will brief the ACRS on the proposed final rule in July 2004.

ACRS Self Assessment Report for 2002-2003

The ACRS staff has interviewed all of the NRC Commissioners, the EDO, NRR Office Director, RES Office Director, NMSS Office Director, and other internal managers and staff to get their views on how well the ACRS has been performing over the last 12-14

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months as input to the required periodic self-assessment paper. Dr. Savio has conducted an interview of a number of stakeholders to assess their views on how well the ACRS has been performing. A draft Commission paper, documenting the results of interviews was provided for review and comments by the Subcommittee and the full Committee. The Commission paper on ACRS/ACNW Self-Assessment should be submitted to the Commission on May 31, 2003.

Future Quadripartite Meetings

During the April ACRS meeting, the ACRS/ACNW Executive Director informed the Committee that he had received a letter from Guenter Weimer of the RSK concerning future Quadripartite meetings (pp. 25-26). In his letter, Mr. Weimer suggests that reactor safety remain the principal scope of the Quadripartite meetings and that nuclear waste and transportation issues be considered as general topics related to reactor safety. Detailed or specific discussions of waste disposal issues be considered at separate meetings. Additionally, the RSK suggests that Switzerland (KSA) and Sweden (RSN) be invited for future meetings and asked to present papers. Future meetings should allow more time for discussions. The ACRS/ACNW Executive Director has issued a positive response to Mr. Weimer.

Budget

As we enter the last half of the fiscal year, it is important that we continue to keep a tight watch over our travel expenditures. Since the last meeting, there have been several new meetings added to the list of activities already scheduled for the remainder of the fiscal year. Each time a new meeting is added it increases our travel expenditures by the thousands, and we have to realign our budget allocation to accommodate the additional cost. For example, budget allocations that were identified for upgrades to the conference room and some office supplies have been reallocated to the travel category so that additional meetings could be conducted. At this time, we have realigned the budget to the extent feasible, and we must now look at consolidating and prioritizing additional travel and the purchase of office supplies.

Comments on NUREG/CR-6813, Issues and Recommendations for Advancement of PRA Technology in Risk-Informed Decisionmaking

NUREG/CR-6813 prepared by Mr. Fleming under a contract with the ACRS/NRC was recently published. Mr. Lochbaum, Union of Concerned Scientists, forwarded comments on this report to the NRC Office of Public Affairs (OPA). Mr. Fleming

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May 8-9, 2003

prepared a response to Mr. Lochbaum, addressing every comment made by Mr. Lochbaum and sent it to Dr. Nourbakhsh. Mr. Lochbaum's comments and Mr. Fleming's response were e-mailed to all members by Dr. Nourbakhsh on May 5, 2003. The ACRS Executive Director e-mailed Mr. Fleming's response to OPA, NRR, and Mr. Lochbaum on May 5, 2003.

Meeting with the Executive Director for Operations

During the June full Committee meeting, the members of the Planning and Procedures Subcommittee are scheduled to meet with the EDO and his deputies during lunch on Friday, June 13 to discuss items of mutual interest.

C. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 503rd ACRS Meeting, June 11-13, 2003.

The 502nd ACRS meeting was adjourned at 7:00 pm on May 9, 2003.



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

July 3, 2003

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

FROM: Mario V. Bonaca *Mario V. Bonaca*
Chairman

SUBJECT: CERTIFIED MINUTES OF THE 502nd MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
(ACRS), MAY 8-9, 2003

I certify that based on my review of the minutes from the 502nd 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.



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

June 24, 2003

MEMORANDUM TO: ACRS Members

FROM: Sherry Meador *Sherry Meador*
Technical Secretary

SUBJECT: PROPOSED MINUTES OF THE 502ND MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS -
MAY 8-9, 2003

Enclosed are the proposed minutes of the 502ND 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, which will be distributed within six (6) working days from the date of this memorandum.

Attachment:
As stated

Total number of institutions	Doctorate-granting burden hours	Masters-granting burden hours	Bachelors degree burden hours	FFRDC's burden hours
FY 1999 480	20.8	13.0	7.5	9.4
FY 2000 700	21.0	12.0	10.5	9.2
FY 2001 625	30.2	11.9	9.0	12.1

Dated: April 15, 2003.

Teresa R. Pierce,

Reports Clearance Officer.

[FR Doc. 03-9682 Filed 4-18-03; 8:45 am]

BILLING CODE 7555-01-M

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 (ACRS) will hold a meeting on May 8-9, 2003, in Conference Room T-2B3, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the **Federal Register** on Monday, November 20, 2002 (67 FR 70094).

Thursday, May 8, 2003

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

8:35 a.m.-10:30 a.m.: Vessel Head Penetration Cracking and Degradation (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and industry regarding industry responses to NRC Bulletin 2002-02, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," Electric Power Research Institute's Materials Reliability Program's proposed inspection program, wastage research, and related matters.

10:45 a.m.-12:15 p.m.: Proposed Revisions to Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the proposed revisions to Regulatory Guide 1.178, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Inspection of Piping," and to Standard Review Plan Section 3.9.8, "Standard Review Plan for the Review of Risk-

Informed Inservice Inspection Applications."

1:15 p.m.-2:15 p.m.: Operating Experience Program Effectiveness (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding ongoing efforts to improve the agency's Reactor Operating Experience Program.

2:15 p.m.-3:15 p.m.: Draft Commission Paper on ACRS Self Assessment (Open)—The Committee will discuss a draft Commission Paper regarding ACRS Self Assessment.

3:30 p.m.-7 p.m.: Proposed ACRS Reports (Open/Closed)—The Committee will discuss proposed ACRS reports on matters considered during this meeting, as well as a proposed ACRS report on Advancement of PRA Technology to Improve Risk-Informed Decisionmaking. In addition, the Committee will consider a proposed ACRS report on Safeguards and Security (Closed). *The discussion of the Safeguards and Security report will be held in Room T-8E8.*

Friday, May 9, 2003

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.-9 a.m.: Subcommittee Report on the Revised Mixed Oxide (MOX) Fuel Fabrication Facility Application (Open)—Report by the Chairman of the ACRS Subcommittee on Reactor Fuels regarding the revised construction authorization application for the MOX Fuel Fabrication Facility and the staff's proposed Safety Evaluation Report.

9 a.m.-9:15 a.m.: Subcommittee Report on the Integrated Industry Initiating Event Performance Indicator (Open)—Report by the Chairman of the Reliability and PRA Subcommittee regarding the integrated industry initiating event performance indicator which is part of the Industry Trends Program.

9:15 a.m.-10:15 a.m.: Future ACRS Activities/Report of the Planning and Procedures Subcommittee (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. Also, it will hear a report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

10:15 a.m.-10:30 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.

10:45 a.m.-6:30 p.m.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports.

6:30 p.m.-7 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 October 11, 2002 (67 FR 63460). In accordance with those 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. Persons desiring to make oral statements should notify the Associate Director for Technical Support named below 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 the meeting may be limited to selected portions of the meeting as determined by the Chairman. Information regarding the time to be set aside for this purpose may be obtained by contacting the Associate Director prior to the meeting. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the Associate Director if such

rescheduling would result in major inconvenience.

In accordance with subsection 10(d) Pub. L. 92-463, I have determined that it is necessary to close a portion of this meeting noted above to discuss and protect information classified as national security information pursuant to 5 U.S.C. 552b(c)(1).

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, as well as the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by contacting Dr. Sher Bahadur, Associate Director for Technical Support ((301) 415-0138), between 7:30 a.m. and 4:15 p.m., ET.

ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at pdr@nrc.gov, or by calling the PDR at 1-800-397-4209, or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS) which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> or <http://www.nrc.gov/reading-rm/doc-collections/> (ACRS & ACNW Mtg schedules/agendas).

Videoteleconferencing service is available for observing open sessions of 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., ET, at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the videoteleconferencing link. The availability of videoteleconferencing services is not guaranteed.

Dated: April 15, 2003.

Andrew L. Bates,
Advisory Committee Management Officer.
[FR Doc. 03-9718 Filed 4-18-03; 8:45 am]
BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards

Meeting of the Subcommittee on Reliability and Probabilistic Risk Assessment; Notice of Meeting

The ACRS Subcommittee on Reliability and Probabilistic Risk

Assessment will hold a meeting on May 7, 2003, Room T-2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Wednesday, May 7, 2003—2 p.m. Until the Conclusion of Business

The purpose of this meeting is to review the integrated industry initiating event indicator as a part of the Industry Trends Program. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, and other interested persons regarding this matter. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Ms. Maggalean W. Weston (telephone (301) 415-3151) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 8 a.m. and 5:30 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: April 15, 2003.

Howard J. Larson,
Acting Associate Director for Technical Support, ACRS/ACNW.
[FR Doc. 03-9719 Filed 4-18-03; 8:45 am]
BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards, Subcommittee Meeting on Planning and Procedures; Notice of Meeting

The ACRS Subcommittee on Planning and Procedures will hold a meeting on May 7, 2003, Room T-2B1, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance, with the exception of a portion that may be closed pursuant to 5 U.S.C. 552b(c)(2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would

constitute a clearly unwarranted invasion of personal privacy.

The agenda for the subject meeting shall be as follows:

Wednesday, May 7, 2003—11 a.m.—1 p.m.

The Subcommittee will discuss proposed ACRS activities and related matters. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. Sam Duraiswamy (telephone: (301) 415-7364) between 7:30 a.m. and 4:15 p.m. (ET) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted only during those portions of the meeting that are open to the public.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 4:15 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes in the agenda.

Dated: April 15, 2003.

Howard J. Larson,
Acting Associate Director for Technical Support, ACRS/ACNW.
[FR Doc. 03-9720 Filed 4-18-03; 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.

Extension:

Rule 15g-3, SEC File No. 270-346, OMB Control No. 3235-0392
Rule 15g-4, SEC File No. 270-347, OMB Control No. 3235-0393
Rule 15g-5, SEC File No. 270-348, OMB Control No. 3235-0394
Rules 17Ad-6 and 17Ad-7, SEC File No. 270-151, OMB Control No. 3235-0291

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 requests for extension of the previously

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

April 15, 2003

**SCHEDULE AND OUTLINE FOR DISCUSSION
502nd ACRS MEETING
MAY 8-9, 2003**

**THURSDAY, MAY 8, 2003, 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 (MVB/JTL/SD)
 - 1.2) Items of current interest (MVB/SD)

- 2) 8:35 - ^{10:35}~~10:30~~ A.M. Vessel Head Penetration Cracking and Degradation (Open)
(FPF/JDS/MWW)
 - 2.1) Remarks by the Subcommittee Chairman
 - 2.2) Briefing by and discussions with representatives of the NRC staff and industry regarding industry responses to NRC Bulletin 2002-02, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," Electric Power Research Institute's Materials Reliability Program's proposed inspection program, wastage research, and related matters.

- 10:35 - 10:50
3) ~~10:30 - 10:45~~ A.M. *****BREAK*****

- 10:50
3) ~~10:45 - 12:15~~ P.M. Proposed Revisions to Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping (Open) (WJS/MRS/SD)
 - 3.1) Remarks by the Subcommittee Chairman
 - 3.2) Briefing by and discussions with representatives of the NRC staff regarding the proposed revisions to Regulatory Guide 1.178, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Inspection of Piping," and to Standard Review Plan Section 3.9.8, "Standard Review Plan for the Review of Risk-Informed Inservice Inspection Applications."

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

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

- 4) 1:15 - ^{2:37}~~2:45~~ P.M. Operating Experience Program Effectiveness (Open)
(JDS/RC/MWW)
 - 4.1) Remarks by the Subcommittee Chairman
 - 4.2) Briefing by and discussions with representatives of the NRC staff regarding ongoing efforts to improve the agency's Reactor Operating Experience Program.

- 5) ^{2:37-3:35}
~~2:15 - 3:15 P.M.~~ Draft Commission Paper on ACRS Self Assessment (Open)
(MVB/RPS)
Discussion of the draft Commission Paper regarding ACRS Self Assessment.
- ^{3:35-3:55}
~~3:15 - 3:30 P.M.~~ *****BREAK*****
- 6) 3:30 - 7:00 P.M. Preparation of ACRS Reports (Open/Closed)
Discussion of proposed ACRS reports on:
- ^{5:00-6:30} 6.1) Advancement of PRA Technology to Improve Risk-Informed Decisionmaking (GEA/HN)
- ^{6:30-7:00} 6.2) Vessel Head Penetration Cracking and Degradation (FPF/JDS/MWW)
- 6.3) Proposed Revisions to Regulatory Guide 1.178 and SRP Section 3.9.8 for Risk-Informed Inservice Inspection of Piping (WJS/MRS/SD)
- ^{3:55-4:50} 6.4) Safeguards and Security (Closed) (GEA/RPS). This session will be held in Room T-8E8.

FRIDAY, MAY 9, 2003, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 7) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (MVB/JTL/SD)
- 8) ^{9:10}
8:35 - ~~9:00~~ A.M. Subcommittee Report on the Revised Application for the Mixed Oxide (MOX) Fuel Fabrication Facility (Open) (DAP/MWW/RC)
Report by the Chairman of the Reactor Fuels Subcommittee regarding the Subcommittee's review of the revised construction authorization application for the MOX Fuel Fabrication Facility and the staff's proposed Safety Evaluation Report.
- 9) ^{9:10-9:25}
~~9:00~~ - 9:15 A.M. Subcommittee Report on the Integrated Industry Initiating Event Performance Indicator (Open) (GEA/MWW)
Report by the Chairman of the Reliability and PRA Subcommittee regarding the Subcommittee's review of the integrated industry initiating event performance indicator which is part of the Industry Trends Program.
- 10) ^{9:25-10:45}
9:15 - ~~10:15~~ A.M. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (MVB/JTL/SD)
- 10.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS meetings.
- 10.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

10:45-11:00

BREAK

- 11) 10:15 - 10:30 A.M. Reconciliation of ACRS Comments and Recommendations (Open)
(MVB, 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.
- 10:30 - 10:45 A.M. *****BREAK*****
- 12) 10:45 - 12:00 Noon Preparation of ACRS Reports (Open)
Discussion of proposed ACRS reports listed under Item 6.
- 12:00 - 1:00 P.M. *****LUNCH*****
- 13) 1:00 - 6:30 P.M. Preparation of ACRS Reports (Open)
Continue discussion of proposed ACRS reports listed under Item 6.
- 14) 6:30 - 7:00 P.M. Miscellaneous (Open) (MVB/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:

11:15-5:45 Vessel Head - Final
1:00-1:30 PRA - Final
2:30-3:15 RG 1.178 - Final

- 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.
- Thirty-Five (35) copies of the presentation materials should be provided to the ACRS.

APPENDIX III: MEETING ATTENDEES

502nd ACRS MEETING
MAY 8-9, 2003

NRC STAFF (May 8, 2003)

A. Hiser, NRR	A. Persinko, NMSS
B. Moroney, NRR	J. Tatum, NRR
J. Galla, NRR	S. Sanders, NRR
M. Mitchell, NRR	A. Barker, NRR
K. Gott, RES	B. Elliot, NRR
B. LeFave, NRR	D. Kalinousky, RES
B. Cullen, RES	T. Chan, NRR
B. Fu, NRR	T. Sullivan, NRR
A. Mendiola, NRR	A. Howe, NRR
E. Reichelt, NRR	R. Barrett, NRR
R. Davis, NRR	J. Collins, NRR

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

D. Harne, McGraw-Hill ✓
S. Koff, Cleveland Plain Dealer ✓
M. Woods, Pittsburgh Post Gazette ✓
A. Tabatabazi, Link Technologies ✓
S. Traiford, Link Technologies ✓
P. O'Regan, EPRI
B. Bradley, NEI
A. Wyche, SERCH Licensing/Bechtel
K. Balkey, Westinghouse
P. Stevenson, Westinghouse
D. Raleigh, LIS Scientech
D. Horner, McGraw-Hill ✓
P. Hastings, DCS ✓
K. Ashe, DCS ✓
D. Alberstein, DOE/NNSA
J. Kurakami, Japan Nuclear ✓



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

May 19, 2003

**SCHEDULE AND OUTLINE FOR DISCUSSION
 503rd ACRS MEETING
 JUNE 12-13, 2003**

**THURSDAY, JUNE 12, 2003, 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 (MVB/JTL/SD)
 - 1.2) Items of current interest (MVB/SD)

- 2) 8:35 - 6:00 P.M. **WORKSHOP ON SAFETY CULTURE** (Open) (GEA/MWW/MME)
 - 2.1) 8:35 - 8:45 A.M. - Introductory Statement - Remarks by the Subcommittee Chairman regarding the scope, outline, and anticipated outcome of the Workshop.
 - 2.2) 8:45 - 12:45 P.M. [**10:00-10:15 A.M. BREAK**] - Panel A - Collective Understanding of Safety Culture (Open)
 Presentations by and discussions with representatives of the NRC staff, nuclear industry, private consultants, and public regarding collective understanding of safety culture.

 - 12:45 - 1:45 P.M. *****LUNCH*****
 - 2.3) 1:45 - 5:00 P.M. [**3:20-3:35 P.M. BREAK**] - Panel B - Attributes of Safety Culture (Open)
 Presentations by and discussions with representatives of the NRC staff, nuclear industry, private consultants, and public regarding attributes of safety culture.
 - 2.4) 5:00 - 6:00 P.M. - Conclusions and Outcome of the Workshop (Open) - Discussion of conclusions resulting from the Workshop.

**FRIDAY, JUNE 13, 2003, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,
 ROCKVILLE, MARYLAND**

- 3) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (MVB/JTL/SD)

- 4) 8:35- 10:00 A.M. Update to Generic License Renewal Guidance Documents (Open) (GML/MVB/SD)
 - 4.1) Remarks by the Subcommittee Chairman
 - 4.2) Briefing by and discussions with representatives of the NRC staff regarding potential improvements to license renewal guidance documents (Generic Aging Lessons Learned Report; Regulatory Guide 1.188, Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses; Standard Review Plan for Review of License Renewal Applications; and NEI 95-10, Industry Guideline for Implementing the Requirements of 10 CFR Part 54).

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

- 5) 10:00 - 10:30 A.M. Subcommittee Report on the Fort Calhoun License Renewal Application (Open) (MVB/GML/RC)
Report by the Subcommittee Chairman regarding the Subcommittee's review of the license renewal application for the Fort Calhoun Station Unit 1 and the associated NRC staff's Safety Evaluation Report.
- 10:30 - 10:45 A.M. *****BREAK*****
- 6) 10:45 - 11:45 A.M. Proposed Strategy for Preparing the 2004 ACRS Report on the NRC Safety Research Program (Open) (DAP/RPS/HSN)
Report by the Chairman of the Safety Research Program Subcommittee regarding a proposed strategy for preparing the 2004 ACRS report on the NRC Safety Research Program.
- 11:45 - 12:45 P.M. *****LUNCH*****
- 7) 12:45 - 1:45 P.M. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (MVB/JTL/SD)
7.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS meetings.
7.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.
- 8) 1:45 - 2:00 P.M. Reconciliation of ACRS Comments and Recommendations (Open) (MVB, 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.
- 2:00 - 2:15 P.M. *****BREAK*****
- 9) 2:15 - 6:30 P.M. Preparation of ACRS Reports (Open)
Discussion of the proposed ACRS reports on:
9.1) Safety Culture Report (GEA/MWW)
9.2) Update to Generic License Renewal Guidance Documents (GML/MVB/SD)
9.3) Safeguards and Security (Closed) (GEA/RPS). **This session will be held in Room T-8E8.**
- 10) 6:30 - 7:00 P.M. Miscellaneous (Open) (MVB/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.**
- **Thirty-Five (35) copies of the presentation materials should be provided to the ACRS.**

APPENDIX V
LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE
502nd ACRS MEETING
MAY 8-9, 2003

[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 8-9, 2003

- 2 Vessel Head Penetration Cracking and Degradation
 2. Reactor Vessel Head Inspections presentation by Dr. A. Hiser, NRR [Viewgraphs]
 3. Plans for Addressing the Davis-Besse Lessons Learned Task Force Recommendations presentation by NRR and RES [Viewgraphs]
 4. RES/DET/EMB Programs and Activities to Address: Nickel-Base Alloy Cracking; Boric Acid Corrosion of Pressure Boundary Materials; and Safety Assessment of Exposed Cladding in Davis-Besse Cavity presentation by W. Cullen, RES

- 3 Proposed Revisions to Regulatory Guide 1.178 and Standard Review Plan Section 3.9.8 for Risk-Informed Inservice Inspection of Piping
 5. Proposed Change to Risk Informed Inservice Inspection Regulatory Guide 1.178 and SRP Section 3.9.8 presentation by RES and NRR [Viewgraphs]
 6. Background/History of Risk-Informed Inservice Inspection Activities

- 4 Operating Experience Program Effectiveness
 7. Operating Experience Task Force presentation by C. Ader, RES [Viewgraphs]

- 10 Future ACRS Activities/Report of the Planning and Procedures Subcommittee
 8. Future ACRS Activities/Final Draft Minutes of Planning and Procedures Subcommittee Meeting - May 7, 2003 [Handout #10.1]

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

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- 2 Vessel Head Penetration Cracking and RPV Head Degradation
 1. Table of Contents
 2. Proposed Schedule
 3. Status Report
 4. Letter from Richard Barrett, NRC, to Alex Marion, NEI, Subject: "Flaw Evaluation Guidelines," April 11, 2003

- 3 Proposed Revisions to Regulatory Guide 1.178 and Standard Review Plan Chapter 3.9.8 for Risk-Informed Inservice Inspection of Piping
 5. Table of Contents
 6. Proposed Schedule
 7. Status Report
 8. Report dated June 12, 1998, from R. L. Seale, Chairman, ACRS, to Shirley Ann Jackson, Chairman, NRC, Subject: Proposed Final Standard Review Plan Section 3.9.8 and Regulatory Guide 1.178 for Risk-Informed Inservice Inspection of Piping
 9. Letter dated April 25, 2003, from Scott F. Newberry, RES, to John T. Larkins, Executive Director, ACRS, Subject: ACRS Review of Draft Revised Regulatory Guide 1.178, "An Approach for Plant Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping," and the Associated Standard Review Plan Chapter 3.9.8." (Predecisional Draft)
 10. Letter dated April 21, 2003, from Robert Bryan, Jr., Chairman, Westinghouse Owners Group, to Samuel J. Collins, Director, NRR, Subject: NRC Requests for Additional Information Associated with Plant Specific Applications of the Methodology in WCAP-14572-NP-A, Rev. 1, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report"

- 4 Operating Experience Program Effectiveness
 11. Table of Contents
 12. Proposed Schedule
 13. Status Report
 14. Action Plan for Addressing Davis-Besse Lessons Learned Task Force Recommendations regarding Operating Experience Program Effectiveness
 15. Reactor Operating Experience Task Force Charter (Memorandum from R. Borchardt and J. Strosnider to C. Ader, March 28, 2003)

16. Proposed Operating Experience Program Attributed and Objectives (Memorandum from C. Ader dated April 30, 2003)
17. Senior Management Review of the Lessons-Learned Report for the Degradation of the Davis-Besse Nuclear Power Station Reactor Pressure Vessel Head (Memorandum from C. Paperiello to W. Travers, November 26, 2002)
18. Actions Resulting from the Davis-Besse Lessons Learned Task Force Report Recommendations (Memorandum from W. Travers to S. Collins and A. Thadani, January 3, 2002)

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
502ND FULL COMMITTEE MEETING

MAY 8-10, 2003

MAY 8, 2003
Today's Date

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<u>NAME</u>	<u>NRC ORGANIZATION</u>
Allen Hiser	NRR/DE/EMCB
BRENDAN MORONEY	NRR/DLPM
Joe Gallo	NRR/DSSA
Matthew A. Mitchell	NRR/DE/EMCB
Karen Gott	RES/DET/MEB (SKI)
Bill LeFare	NRR/DSSA/SPLB
Bill Cullen	RES/DET/MEB
Barb Fu	NRR/DE/EMCB
ANTHONY MENDIOLA	NRR/DLPM/PD32
ERIC REICHEL	NRR/DE/EMCB
Robert Davis	NRR/DE/EMCB
JAY COLLINGS	"
RICHARD BARRETT	NRR/DE
Allen Howe	NRR/DLPM
Ted Sullivan	NRR/DE
TERENCE CHAN	NRR/DE
Douglas Kulinsky	RES/DET/MEB
BARRY ELLIOT	NRR/DE/EMCB
Allan Barker	NRR/DIPM/IIPB
Serita Sanders	NRR/DIPM/IIPB
Jim Tatum	NRR/DSSA/SPLB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
502ND FULL COMMITTEE MEETING
MAY 8-10, 2003

MAY 8, 2003
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NAME

AFFILIATION

Daniel Horne

McGraw-Hill

Stephen Koff

Cleveland Plain Dealer

Mike Woods

Pulsburgh Post Gazette

Ali Tabatabai

Link Technologies

SPYROS TRAFORNO

LINK TECHNOLOGIES

~~Wick Sanders~~

~~NER/DIPM/EPB~~

Patrick O'Regan

EPRI

Biff Bradley

NEI

Altheja Wyche

SERCH Licensing/Bechtel

Ken Balkey

Westinghouse Electric Co.

Paul Stevenson

Westinghouse Electric Co.

Deann Raleigh

HS, Sciencetech

ITEMS OF INTEREST

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**ITEMS OF INTEREST
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NRC NEWS

U. S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs

Telephone 301/415-820

Washington, DC 20555-0001

E-mail: opa@nrc.gov

Web Site: www.nrc.gov

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REALISTIC CONSERVATISM

Remarks of Chairman Nils J. Diaz
United States Nuclear Regulatory Commission

before the

NRC Regulatory Information Conference

Washington, D.C.
April 16, 2003

I. Introduction and Overview

My fellow Commissioners, distinguished foreign guests, distinguished representatives of the NRC staff, of the industry, of stakeholder organizations of all kinds, of the media, and of the public, it is a privilege and a pleasure to address you today. I see many familiar faces here, and at this, the seventh Regulatory Information Conference I have attended since joining the Commission, my face is probably familiar to most of you as well.

What is different this year: I am addressing you as NRC Chairman. We are thankful for Chairman Meserve's service to the nation. The transition has been seamless, and I would like to thank all those who have helped make that possible. The NRC discharges all of its responsibilities, come rain, sun or snow. Most of these activities escape headlines or outside attention, but inside they continue to be effected; these are indispensable components of what we are and what we do, and I want to thank the staff that labors day in and day out to get them done.

Today I would like to focus on three issues of major concern to the NRC and its stakeholders that are in the limelight: nuclear security, nuclear safety, and the need of the public for sound

information about nuclear issues. Before doing so, however, I would like to talk briefly in broader terms, about my conception of the NRC and its mission.

A great deal has changed since I first addressed the NRC Regulatory Information Conference six years ago. At the time, I was comparatively new to the NRC, though not to nuclear engineering or nuclear regulation: I had devoted virtually all my adult lifetime to nuclear technology, in various capacities: as a nuclear engineer, as an academic, as an entrepreneur, and even as a senior licensed reactor operator.

In that first talk, in 1997, I surprised some people, and perhaps even ruffled some feathers, by making the point that compliance and safety were not the same thing. Today, that may seem self-evident; but it was controversial at the time. It was an expression of my philosophy as a regulator, which focuses on putting the highest priority on issues of highest safety significance. An important application of this philosophy is what I have described of late as "realistic conservatism." (For purposes of simplicity, I am using "conservatism" in the sense of preserving adequate safety margins, and I am using "realistic" in the sense of being anchored in the real world of physics and experience).

Our objective should be to regulate in a manner that corresponds to the actual risk presented, and that must be realistically conservative. Neither under-regulation nor over-regulation serves anyone's interests. Under-regulation puts the public safety and the licensees' investment at risk; over-regulation increases costs to licensees and thus to consumers, without a matching safety or security benefit. It could be counter-productive to safety by diverting resources from the important safety issues. That was my belief in 1997, and it hasn't changed.

One other thing that hasn't changed is that I continue to view the NRC and the nuclear industry first and foremost through an engineer's eyes, and I express my views as an engineer. Engineers build based on sound science and technology; nuclear regulation must be built on sound science and technology, *and* be in accordance with the law. There should be no "maybe," "however," "in general," or "but" used to increase or decrease the importance or significance of a regulatory finding, whether positive or negative. It is or it is not. It meets requirements or it does not.

Regulators need to make decisions based on the best technological facts, bounded by law, when the requisite information is there. It should be recognized that sometimes failing to decide is itself a decision, a decision to maintain the status quo, which may be the wrong decision. My pledge to you is that if it's a "damned if you do, damned if you don't" choice, put me with the "do's" -- I would rather be faulted for action than for inaction. As I discharge my present responsibilities, I will endeavor to see that the NRC is known for acting decisively and expeditiously -- and not only that we are acting but that we are making it known. Not everyone may like our decisions -- it is the nature of our business that we cannot satisfy everyone, and we certainly never have in the past -- but at least they should be able to criticize us for the decisions we make, not for the ones we don't make, or take too long making.

Likewise, I would rather be faulted for speaking my mind, as clearly and candidly as possible, than for failing to do so. The great 19th Century English scientist Thomas Huxley used to say,

"Be clear, even if you are wrong, for if you are wrong, sooner or later some fact will come along to set you right." He added the warning that if your objective in using words is to create ambiguity and wiggle room and possible escape hatches for the future, then you are lost, and there is no hope for you.

So this is a further pledge to you: of continued plain speaking. On the issues that concern the NRC and its stakeholders -- the industry, the public, states and other agencies -- you will know where I stand, as in the past. There is just one limitation on my freedom: since the Chairman is by law spokesman for the Commission, I must now be careful to make clear when I am speaking on behalf of the agency and when for myself alone. Today, except when I specifically refer to Commission decisions, I will be expressing my own views.

II. Nuclear Security

I'd like to turn now to those three areas of central concern for the NRC, for its stakeholders, and for the public, that I already mentioned. They are security; nuclear safety; and the need to keep the public informed. They are so interrelated and intertwined that it is really impossible to speak of any one without immediately involving the other two, but the issues are nevertheless distinct. I'll begin with nuclear security, just because it is the issue that has been most prominent in the public mind over the past 18 months.

The terrorist attacks of September 11, 2001, focused public concern on the vulnerability of the national infrastructure to hostile action. For many in the public, the media, and the Congress, one immediate question was: suppose the terrorists had chosen to attack a nuclear power plant? What then?

There was nothing unreasonable about asking that question; on the contrary, it would have been unreasonable *not* to ask it, given the public prominence of anything related to nuclear power or radioactivity. The first answer, as the Commission has been stating, is that nuclear power plants, to a greater extent than any other kind of facility in our entire civilian infrastructure, are built to withstand powerful impacts; the second is that nuclear power plants have been required *for a generation* to assume that attack by well-armed terrorists is a real possibility, to be guarded against 24 hours a day, 365 days a year. Third, we have mitigation systems in place, including emergency planning and response, to minimize any impact on public health and safety. There is no doubt that today, both in our understanding and in our actions on how these three levels work together, there are significant improvements in the protection of public health and safety. They are not easily seen -- and sometimes that is intentional, for security doesn't always advertise -- but they are there. As I have said in the past: "We will take care of our people, promptly and passionately.... Make no mistake, America will deliver the necessary responses to protect public health and safety, and therefore, there will be no 'American Chernobyl.'"

There is one thing that should be said at once regarding terrorism: President Bush and his Administration are absolutely correct in believing that the *first* objective should be to find and neutralize the terrorists. Accomplish that and you have protected the nation's nuclear power plants *and* all its bridges, tunnels, chemical plants, office buildings, etc., at the same time.

Trying to identify and defend individually all the potential targets of terrorism in this country is definitely a second-tier objective. Nevertheless, those second-tier objectives are very much part of the NRC mandate of common defense and security.

Another important point bears emphasizing: it is not possible to resolve all new security issues that confront the nation and the NRC as quickly as they appear, or as fast as we would want. As the NRC confronts such issues, we must review them in the context of our long-standing and enhanced requirements, of the capabilities of the affected regulated entities, and of the multiple sources of information and coordination that are part of the NRC's exercise of its ongoing common defense and security responsibilities. Those issues that present the higher risk deserve earlier consideration. For certain issues, such as the use or range of weaponry for guard force, legislative action may be appropriate. I also have to say that one would be hard pressed to find a faster or more comprehensive and effective response to an increased security threat than has been demonstrated by the NRC and the power reactor sector, and that is a fact.

At the risk of getting a little ahead of myself, this is where issues of presentation are so critical. You have to steer your way between the twin pitfalls of unduly minimizing problems, on the one hand, and exaggerating them, on the other. When the American public is looking to you for solid information about real life issues that concern their safety and their families' safety, you do them a disservice if you understate risks; you do them an equal disservice if you overstate them. Consideration of major reactor accidents and terrorist attacks is not new to the NRC and that's a fact. As I have long said, security is an important subset of safety.

In this regard, when there are problems and gaps, we can and should acknowledge them. At the same time, we don't need to bend over backwards and exaggerate dangers just to demonstrate the seriousness of our commitment to public safety. I think it was James Thurber who once observed that you can wind up just as flat bending over backwards as falling forward onto your face.

I don't mean to suggest that communicating well is easy. We live in a world of sound bites, where sometimes you are lucky if you get a whole sentence to make your point. At a press conference, you are not likely to be asked to give your thoughts on the safety and security of nuclear plants generally, or the X nuclear plant in particular. You are more likely to be asked, "Is the X nuclear plant at risk, yes or no?" You may try to answer that by saying, "The X nuclear plant poses no unacceptable risk," and then going on to explain what that means, but don't count on seeing those exact words in the headline or in the explanation given the next day. It's easy to blame reporters when subtle distinctions get lost in the shuffle, but we have to remember that the reporter is often at the mercy of an editor, and the person who writes the headline may not consult either one.

Thus, I think it is critically important that not just the NRC, but everyone else concerned -- the media, the industry, public groups -- appreciate their responsibility to the public to maintain accuracy and perspective. It's an effort well worth making. The American people have a lot of solid common sense, and a proven capacity to arrive at sound decisions, if they are provided accurate information to work from. At this point, they are having to process a barrage of data

about risk of various kinds, including information on nuclear issues. In that regard, the NRC has to do a better job. This has been and will continue to be one of my highest priorities.

To return to the issue of security. In the aftermath of the September 11 attacks, the Commission, unanimously, undertook a number of measures to improve security at nuclear power plants and to assess areas of possible vulnerability, with the intention to quickly arrive at the probables and work out mitigation strategies. The lessons learned and being learned guide the agency's and licensees' actions.

The enhanced security construct we are establishing for the defense of nuclear power reactors includes three strongly interdependent elements, like the legs of a tripod, all of them directed to one fundamental goal: how to best protect our people, with the appropriate resources placed at the right places. These three elements are:

- enhanced access controls, to prevent unauthorized entry of persons and materials to nuclear facilities;
- enhanced work and training requirements for security personnel, to increase their capability to detect and respond to threats; and
- a revised Design Basis Threat and associated defensive capabilities, derived from the interim compensatory measures previously put in place, with appropriate enhancements.

There are other complementary measures; for example, force-on-force security exercises at nuclear power plants, which have begun at a pace of approximately two per month.

The aim of the security construct is clear enough: deny access to potential wrongdoers, ensuring an ever-present security force that serves as a strong deterrent and as a tactically and weaponry-qualified defensive detail that is capable of defending a facility with high assurance against a Design Basis Threat.

The framework we are now putting in place will add assurance, I believe, of the continued security of operating nuclear power plants, and we have provided adequate interim measures for other significant nuclear facilities as well. We expect to promulgate soon the revision in the Design Basis Threat for operating nuclear power plants and Category 1 nuclear fuel cycle facilities. While the Design Basis Threat describes possible threats against which certain licensees are required to defend, as the Commission said: "[O]ur regulations stipulate that power reactors are not required to be designed or to provide other measures to counteract destructive acts by 'enemies of the United States.'" The Commission explained that "the national defense establishment and various agencies having internal security functions have the responsibility to address this contingency, and that requiring reactor design features to protect against the full range of the modern arsenal of weapons is simply not practical." Yet, the Commission also understands that it may not always be able to draw a bright line between security responsibilities of NRC-regulated entities and those of defense, security and law enforcement authorities.

Responses may overlap for certain threats and coordination or integration of the responses of the various private and governmental organizations would be required.

Nor have we neglected the security of radioactive materials. The Commission decided to use a risk-informed approach in regulating in this area. NRC and the Department of Energy are working to strengthen the U.S. regulatory infrastructure to increase the protection of high-risk radioactive sources which could be used to make a radiological dispersal device. The Commission recently approved the initial study of a joint NRC/DOE Working Group which provided action thresholds for radioactive materials of greatest concern. This report also addressed issues such as tracking and control of radioactive sources and recovery of unsecured radioactive material.

In the area of security we are getting better everyday, and so are our licensees.

Returning to the issue of power reactors, in a statement issued last week, I summarized the current status of our security measures as follows:

With the completion of the revised design basis threats, we expect that there will be a period of regulatory stability during which our power reactor licensees can consolidate the various enhancements that we have ordered. But we intend to continue to work with the Department of Homeland Security and other Federal agencies, as well as State and local law enforcement and emergency planning officials, to ensure an overall integrated approach to the security of these critical facilities. At each step over the past 17 months, we have done what needed to be done to secure these facilities, but as we learn more, I am confident that the NRC, the Department of Homeland Security and other agencies will do whatever it takes to protect the people of this country.

III. Nuclear Safety and Reactor Regulation

As many of you already know, I have long been a strong advocate of risk-informed regulation. I want to change that perception. I want you to know that now I am a strong advocate of risk-informed and performance-based regulation. Last year at this conference, I was frank in stating my concern that the pace of risk-informing NRC's regulations had slowed down; the outlook then was not promising. It has taken a year, but the impasse that prevailed back then is over, and there is significant progress to report. At last year's Regulatory Information Conference, I spoke of the need to accelerate the work on risk-informing loss-of-coolant accident requirements and special treatment requirements. I have taken a strong personal interest in these issues and have worked intensively with my fellow Commissioners and the staff to get these risk-informing initiatives moving.

I am pleased to say that, as of today, the Commission has approved, and directed the staff to issue for public comment, voluntary risk-informed approaches to 10 CFR Part 50 (Commission requirements for licensing nuclear reactors). A proposed rulemaking to risk-inform 10 CFR 50.46, the basic requirements for emergency core cooling systems, includes consideration of redefining the design basis LOCA. This is a fundamental shift in reactor regulation. We know

much more about the probability and consequences of LOCAs than we did in the 1970's and we are now acting on that knowledge. In addition, a new proposed rule, 50.69, which would allow licensees to use a risk-informed alternative to the current Special Treatment requirements, would incorporate risk information into plant operations on a day-to-day basis.

When we add these measures to the changes already made to the maintenance rule, 50.65, in the area of risk assessment and management, to the proposed changes to risk-inform the combustible gas control requirements of 50.44, to the hundreds of license amendment changes accomplished through Regulatory Guide 1.174, and to the new Reactor Oversight Process, we have the *foundation* for a risk-informed and performance-based regulatory program. Risk-informed regulation cannot and should not be expected to carry the whole load; it is time to pair it, where appropriate, with performance-based regulation, so that these two powerful and sometimes interdependent improvements to our regulatory processes can act synergistically. The result, I believe, will lead progressively to more safety-focused licensing and regulation, enabling licensees to achieve correspondingly greater safety focus in the design, construction, operation, and maintenance of nuclear power plants.

We now know that performance-based regulation is possible and has great potential in a democracy like ours, where the marketplace is results-oriented. The Commission defined it in a 1997 White Paper, appropriately titled "Risk Informed and Performance-Based Regulation" which, by the way, is ripe for updating. Simply put, it means regulating outputs and outcomes, rather than inputs. It is a matter of monitoring performance rather than programs; of monitoring what is achieved rather than what is attempted.

The best example of performance-based regulation is the maintenance rule, 10 CFR 50.65. It monitors the effectiveness of maintenance rather than prescribing how it is to be performed. The most recent change to the rule, section (a)(4), requires licensees to assess and manage the risk of maintenance activities, and it is working well. Again, it establishes *what* must be done, and not how it must be done. You won't find paint-by-the-numbers directions. At the same time, there is a role for guidance as to how licensees can meet requirements. Such guidance can be extremely helpful, but guidance is not the same as regulation, and it allows flexibility and innovation on the part of licensees, and that is all to the good.

I can tell you that 10 CFR Part 50 will not be the same when all is said and done, and I am confident that it will never go back to being its old prescriptive self. Quite honestly, I was never sure that we would get this far; but we have, and licensees, the public, and the NRC are all better off for it. If I stop and look at all of these elements, I think we have a strengthened safety construct that allows us to do our job better and the industry to do its job better.

I cannot leave the subject of nuclear safety without discussing the case of Davis-Besse. Davis-Besse is uniquely instructive in many respects -- for what it was, and also what it wasn't. If there is anyone here who doesn't know about the hole in the pressure vessel at Davis-Besse, they probably wandered into the wrong hall by mistake, so I will spare you a restatement of the facts of the case. The existence, undetected for so long, of a hole in the head of the reactor was an enormous failure on the part of the licensee and of the NRC. I want to say that loud and clear.

Specifically, it was a failure to conduct the activities necessary to minimize the potential for degradation of the primary coolant pressure boundary. In other words, process execution broke down.

I want to say equally loudly and clearly that it was not close to being the impending disaster publicly portrayed. It may be asked, aren't those two statements inconsistent? They are not. In this case, our preliminary analysis indicates that the stainless steel liner of the vessel head, thin as it was, was more than adequate to contain the pressure generated within, and it would have done so for quite a while. For the potential break, very conservatively assuming *no leak before break*, the reactor cooling systems, the emergency core cooling systems, and the containment systems, combined with operators' actions, procedures, and emergency plans, constitute a multi-faceted defense to protect the public.

Having said that, I should also emphasize that licensees and the NRC need to make every effort to prevent incidents that *require* reliance on safety systems. I definitely do not want *to need* to depend on the containment, unless I have to. These systems are sound, they are in place as part of defense-in-depth, but reliance should be, first and foremost, on all the systems for normal operation and for anticipated transients. The only good thing to be said about the Davis-Besse event was that it was an *incident* and not an *accident*; and that it served as a reminder of the need for constant vigilance and improved oversight, leading to more timely corrective action.

It's reasonable to assume that the precise situation that occurred at Davis-Besse is something we will never see in the U.S. again. That does not mean that we won't see other unanticipated occurrences or incidents of different kinds. It is in the nature of all industrial concerns that 100% error-free operation from day one to decommissioning may be your goal, but it is not a realistic expectation. Mistakes *will* occur; human beings are fallible; machines will break; we know enough to expect the unexpected; we acknowledge and learn from our mistakes; and we move on, with our experience base enriched. And, nuclear reactors are designed and operated precisely with this in mind, as TMI proved beyond a shadow of a doubt. Nevertheless, it is the NRC's responsibility to ensure that requisite safety margins are not decreased due to lack of attention or poor corrective actions.

The case of Davis-Besse illustrates, I think, some of the problems involved in presenting issues of nuclear safety to a lay audience. Frankly, it *sounds* counter-intuitive to say that public health was not at imminent risk. It *sounds* as though a hole in the reactor head should automatically mean that the public was endangered. As a nuclear engineer and as a regulator, I know otherwise.

At the beginning of this talk, I said that I would be focusing on three areas. That does not mean that the agency is focused only on these issues. We continue progress on license renewals, power uprates, oversight of reactors, materials and waste, as well as all the other functions that are part of our mandate. These and other issues will be discussed in detail in the course of this conference.

IV. Public Perceptions of Nuclear Energy

I'd like to preface my concluding remarks about public perceptions of nuclear energy, and the role of the media in presenting nuclear issues, with some observations from my own life experience. As many of you know, I spent approximately the first third of my life in Cuba. Those of us who have known what it is to live in a society where freedom and democracy do not exist, cherish America's freedoms passionately and appreciate the blessings of democracy intensely.

A free press is one of the greatest assets of a free society. Freedom of the press allows individuals to print what they believe to be accurate, balanced, unbiased, and fair, and also what is not. That is part of democracy and the marketplace of ideas. We trust the people to make their own judgments, rather than a Ministry of Information to censor what is written and broadcast. Anyone who has ever lived in a society with government-controlled media will tell you that if you had to choose between a controlled press that never made a mistake and a free press that made errors every day, you would *always* choose the free press, errors and all.

Having said that, I should also say that errors are no more desirable in publishing a newspaper than running a government agency, a nuclear power plant, or a doctor's office. Inevitable yes, desirable no. When errors are made, I think that too many Americans receive greatly exaggerated notions of the risk posed by nuclear plants, as though incident equaled accident equaled doomsday scenario. And I ask, is it good for the people of America to be unduly fearful, without just cause, and especially so in these trying and turbulent times?

It may very well be that we have been conditioned by so many decades of Hollywood disaster epics that the line between fiction and reality has been blurred. It is certainly true that in the television news business, which is what many Americans depend on for information, the division between hard news and entertainment has eroded over time. Whatever the cause may be, it seems all too often that where nuclear issues are concerned, we see a tendency to hype up what might otherwise be a humdrum story with a whiff of impending danger, or danger narrowly averted. Media hype contributes to public anxiety; public anxiety itself becomes a topic of media coverage; and public worries snowball -- "and there you go again," as President Reagan would say. I think it is appropriate for all of us -- not only the media, but those of us who tend to get quoted in the media on nuclear issues -- to weigh our words, and make sure that we are neither underplaying nor overplaying the actual risks to the public.

As far as the dangers posed by terrorism, I would observe that even terrorists cannot change the laws of physics. They would also confront the robust American infrastructure and the American system of protecting our civilians, and believe me, no one does it better.

On a side note, those of you who are nuclear technologists know that nuclear power isn't rocket science any more. But some people still think it is. That means that communicating to the public in plain terms continues to be a very important and challenging part of our responsibilities.

V. Conclusion

In this talk, I have given my thoughts on some of the major issues facing the NRC, and I have tried to summarize my own regulatory philosophy of "realistic conservatism" -- prudence and hard-headed common sense, firmly grounded in real-world conditions, coupled with a commitment to make decisions and move on. I'm going to practice what I preach. It matches the theme of this conference: building on what was good in the past, and moving to what is better in the future.

The work of the NRC is, in microcosm, a reflection of the nation as a whole. There are competing interests and different points of view, strongly held, but what unites us is far greater than what divides us. All of us -- the NRC, its licensees, the public, stakeholders of all kinds -- have a common interest in nuclear safety and security, and the well-being of our nation. All of us have different perspectives and insights to contribute; at its best, democracy permits a synthesis, in which we glean the best from divergent viewpoints and apply them to our common purposes. I look forward to the opportunity to join with all our constituent stakeholders toward a goal we all share, which is to benefit the American people.

May God keep America, and especially our troops, safe. Have a great conference and thank you.



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Office of Public Affairs

Telephone 301/415-820

Washington, DC 20555-0001

E-mail: opa@nrc.gov

Web Site: www.nrc.gov

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Remarks by Commissioner Edward McGaffigan, Jr.
U.S. Nuclear Regulatory Commission

Regulatory Information Conference

Washington, D.C.

April 17, 2003

I appreciate the opportunity to appear before you today for the seventh time. I do not intend to take up very much of the next hour in delivering a speech. Like Chairman Diaz yesterday, I intend to give the floor over to answering your questions for the bulk of the time.

The past year has been marked by significant progress in enhancing the already unmatched security at our nation's civilian nuclear facilities. A year ago I concluded my remarks to you by stating: "The Commission has much to do in the months ahead on security matters. It is the single issue which has most dominated our time since September 11. We have a firm foundation on which to build and we will continue to ensure that these facilities are the best defended and most physically hardened facilities in our critical infrastructure. We will do so responsibly, in full consultation with the Office of Homeland Security, the Justice Department, the Pentagon, the intelligence community and others. We hope that the Congress will pass the legislation which we have been requesting for many years that we believe would bolster the current security regime. The NRC is not an independent actor on homeland security matters. We need to be part of the integrated national effort which the President is seeking to put in place with the help of the Congress. A year from now I believe that we can have much of our enhanced security regime in place. I look forward to discussing these issues with you then."

Today, we do have much of our enhanced security regime in place. Month after month the NRC staff, particularly the staff of the Office of Nuclear Security and Incident Response, and the Commission have worked long hours to develop, analyze and then implement appropriate security enhancements for all of our homeland-security significant licensees. We have done so in partnership with other federal agencies. We have done so

in partnership with the States to the maximum extent possible. We have done so in partnership with cleared industry stakeholders. And we have done so while listening to the input of stakeholders who do not hold clearances, such as the Project on Government Oversight (POGO), which became a public channel for the frustration of some members of our licensees' security forces.

I do not have time to cite all of our achievements. But I would refer you to our home page, where under Commission Documents, Commission Correspondence, you will find a September 5, 2002 and a March 31, 2003 letter from former Chairman Meserve to Secretary Ridge that outlines those achievements. I honestly believe that aside from the Office of Homeland Security, now the Homeland Security Council, no agency of government has worked harder, or achieved more, on homeland security in the past nineteen months than the NRC. You heard Marianne Burtnett of the Homeland Security Council staff tell you yesterday that NRC was the "rock star" last August in putting in place on time the five-tier Homeland Security Advisory System directed by Homeland Security Presidential Directive #3. She said that we "led the way" and were a model for other agencies in how to implement that Presidential Directive. Many hours went into that achievement last summer. The staff first held closed meetings with various categories of licensees and State officials. They sought to determine what other agencies were doing. And then with the help of the Commission, they drafted Regulatory Issue Summary 2002-12 for each category of licensee, a far larger set of licensees than had been covered by NRC's previous three-tier threat advisory system. The simple act of mailing that regulatory issue summary with its safeguards information or confidential attachment to every licensee, with copies to every State Homeland Security Advisor and every State NRC Liaison Officer, by the President's August 24, 2002 deadline was a monumental effort carried out by our support staff, and to my knowledge with no wrong enclosures.

This is a gathering largely of those interested in reactor issues, and I will soon turn to reactor security. But I want to tell another story about extraordinary staff achievement, this time with regard to the control of high-risk radioactive sources that might be used in a Radiological Dispersal Device. Former Chairman Meserve and Secretary of Energy Abraham met last summer and agreed to launch a joint working group to study additional controls on high-risk radioactive sources. By early this year that working group had identified the radionuclides of greatest concern and recommended action levels (in Curies) for each radionuclide. They had outlined a program to achieve cradle to grave controls on those sources, including export and import controls. Simultaneously we were working with the International Atomic Energy Agency (IAEA) to revise their draft Code of Conduct on the Safety and Security of Radioactive Sources and supporting documents to insure compatibility with the DOE/NRC Working Group recommendations. As we prepared for potential war with Iraq, the Homeland Security Council assigned NRC the task of tightening control on these high-risk radioactive sources as part of what became known on March 17 as Operation Liberty Shield. With tremendous help from our Agreement State colleagues, who for security reasons could not be fully informed of our intentions, our staff put together the mailing addresses and fax numbers of every licensee in the country who might possess such high-risk sources, some 1500 or so licensees. On

the evening of March 17 within minutes of the commencement of Liberty Shield, the NRC staff issued an advisory to them, outlining additional security measures they should take. Again, I believe that our staff was considered a model by HSC in carrying out this Presidential assignment.

Let me now turn to power reactor security. When we met last year, we had just issued our February 25, 2002 Order with its interim compensatory measures. That Order had made implicit (and in some cases, for example the size of the truck bomb, explicit) changes in the design basis threat for radiological sabotage. Those changes were captured in the enhanced adversary characteristics used in the table top security exercises that resumed last summer. For the first time those security exercises specifically sought the involvement of a broad array of State, local and Federal law enforcement and emergency planning officials, because as I said last year, we have sought from the outset of our security review to put in place an integrated approach to the security of these sites. Wherever we draw the line on the design basis threat, there is a possibility of a beyond design basis threat actually confronting the plant. The responsibility for dealing with such beyond design basis threats is clearly shared with government, and government has to tell you how it will carry out its responsibilities. As Chairman Diaz indicated yesterday, we intend to work with the Department of Homeland Security on this. But first we need to revise the DBT. And we will soon do this by Order.

In revising the DBT for radiological sabotage, we have sought the views of as broad a range of stakeholders as possible given that all of the details are properly safeguards information. The staff has met with other Federal agencies, State homeland security officials and cleared industry representatives. They have received many written responses to our request for comments. The Commission has twice met with industry representatives to hear directly their concerns. I am proud of the process we have followed. We have followed similar processes in developing the access authorization Order issued in January and the training Order approved by the Commission and soon to be issued. Indeed, on the training Order, at POGO's suggestion, the staff sought direct input from security officers around the nation. On the fatigue Order we followed a totally public process, putting out two drafts for comment and holding two rounds of public meetings on those drafts.

I hear a great deal of comment about using a rulemaking process rather than Orders to effect these changes. Frankly, aside from fatigue, I do not believe that any conforming rulemaking activity that subsequently follows these Orders will go into any detail on any of these matters. The details belong in safeguards information documents. To be binding, they need to be in the form of Orders. In my view, the 10 CFR 73.1 description of the design basis threat for radiological sabotage in the future should consist of about one line that says the details are issued by Order. No one's legal rights are curtailed by the issuance of such Orders. Any licensee has the right to contest the Order before a licensing board panel, which is quite capable of holding closed hearings on safeguards information matters. We have gone the extra mile in having as broad comment as possible before issuing all but the initial February 25, 2002 Order.

This is not the forum in which to discuss the details of the DBT. But I will tell you that the Commission has thought long and hard about the fundamental issue we posed in our January 2, 2003 letter asking for comments from cleared stakeholders, namely the appropriate limits on the threat against which a regulated private sector security force should have high assurance of defending. The industry has publicly argued that essentially anything beyond the threat enhancements of last summer's enhanced adversary characteristics involves an "enemy of the State" threat against which they should not be required to defend. I respect the argument, but I will end up disagreeing on some of these matters. The "enemy of the State" regulation, 10 CFR 50.13, was not meant to be construed as widely as the industry attempts to do today.

When the Commission completes its deliberations on the DBT, we will have put in place all the results of our comprehensive security review as they pertain to power reactors. As Chairman Diaz has said, we then expect a period of regulatory stability during which our power reactor licensees can consolidate the various enhancements that we have ordered. But our work will be far from over. We intend to continue to work with the Department of Homeland Security and other Federal agencies, as well as State and local law enforcement and emergency planning officials, to insure an overall integrated approach to the security of these critical facilities. You saw the early fruits of that effort on March 17 as part of Operation Liberty Shield, in which DHS took the lead in talking to Governors about possible augmentation of security at power reactor facilities. And we will continue to try to identify possible cost-effective mitigating strategies against beyond-DBT threats.

Chairman Diaz spoke yesterday about the difficulty of public communication on security matters, and indeed in general. NRC has a responsibility to say what we can about these matters in public without aiding potential terrorists. We should not abandon the playing field to either anti-nuclear activists or pro-industry groups. As you will see from the transcripts of public Commission meetings, I am clearly frustrated that we have not said more thus far, particularly when it comes to the vulnerability of spent fuel pools to terrorist attacks. There is a lot of bad information being spread about the alleged vulnerability of spent fuel pools, and this has been going on for more than a year. Unfortunately, in some cases, previous NRC staff or contractor studies, which themselves either have errors, or made non-physical simplifying assumptions, are misused to make extraordinary claims about spent fuel pool vulnerabilities. The worst of these NRC staff studies was NUREG-1738, a study which the staff released in January 2001, but which the Commission never endorsed because of our deep misgivings about it. Indeed we asked for public comments on NUREG-1738, held a public meeting on it in February 2001 at which various groups asked that it be peer-reviewed because of its obvious flaws, but never decided that question because the paper which would have been the vehicle for that decision was withdrawn by the staff after the events of September 11, 2001. I can tell you I would have voted for a peer review and that our current more realistic research on spent fuel vulnerability does not support that study. As Chairman Diaz said yesterday in response to a question, terrorists can't violate the laws of physics, but researchers can. Even they can't do it for long. We will soon be releasing more information on spent fuel vulnerability. In fact, a fact sheet may already be in ADAMS. Let me read from that fact

sheet:

"Nuclear power reactor spent fuel pools are not soft structures. They are neither easily reached nor easily breached. Instead, they are robust structures constructed of very thick concrete walls with stainless steel liners. In addition, other design characteristics of these pools can make them highly resistant to damage and can ease the ability to cope with any damage. Such characteristics can include having the fuel in the pool partially or completely below grade and having the pool shielded by other plant structures.

"Spent fuel pools at operating power reactors are protected by robust licensee security plans, which have been further augmented as a result of NRC's February 25, 2002 Order, the details of which are sensitive. Even prior to September 11, 2001, licensees had multiple barriers and sensors, well-armed and trained guards, ready to defend from prepared positions. The February 25, 2002 Order augmented those capabilities through requirements for increased patrols, augmented security forces, additional security posts, greater vehicle stand-off distances, and enhanced coordination with law enforcement authorities. The Order also directed licensees to develop guidance and strategies to maintain or restore spent fuel pool cooling capabilities using existing or available resources.

"The National Research Council in its 2002 report, Making the Nation Safer: The Role of Science and Technology in Countering Terrorism, found: "The threat of terrorist attacks on spent fuel storage facilities, like reactors, is highly dependent on design characteristics. Moreover, spent fuel generates orders of magnitude less heat than an operating reactor, so that emergency cooling of the fuel in the case of an attack could probably be accomplished using 'low tech' measures that could be implemented without significant exposure of workers to radiation." The Commission agrees with this statement, and through its February 25, 2002 Order has already made provision that licensees prepare such "low tech" measures in advance.

"In the unlikely event that a spent fuel pool were successfully attacked, and the water either partially or completely drained (an almost impossible event for below grade pools), there would still be several hours or longer for recovery of fuel cooling.

"Finally, preliminary results from current NRC analyses indicate that, even if all water were lost in a spent fuel pool and spent fuel recovery actions were not successful in cooling the fuel, most fuel in the pool would not be involved in any fire initiated in the fuel cladding. Thus, the consequences of such an extreme event would be much less severe than previously estimated in the NRC staff's February 2001 study, NUREG-1738.

"Given all of this, NRC does not believe that the fundamental recommendation of the Alvarez study, namely that all spent fuel more than five years old be placed in dry casks through a crash 10-year program costing many billions of dollars, is at all justified. The Commission will release an initial critique of the Alvarez study shortly."

How will we convince the public at large that what we are doing to protect nuclear

facilities from terrorist attacks is reasonable, given the details of our security arrangements will be classified? In all honesty, I am not sure that we ever will. The debate may be much like the defense debate throughout the Cold War. That debate featured "missile gaps" and "Team Bs" and never ended until the Cold War was over. The classified information on Soviet capabilities was subject to multiple interpretations. Cold War hawks tended to worst-case the information, attribute extraordinary performance to Soviet and Warsaw Pact forces, and demand sharp increases in defense spending. Cold War doves tended to see Soviet and Warsaw Pact capabilities as Potemkin villages, and argue for cuts in defense spending. The truth was somewhere in between, but as a nation we insured through our elected representatives, both Presidents and Congresses, that the threat was adequately, if not perfectly met. We erred, if at all, with today's 20-20 hindsight of real Soviet capabilities, on the high side. The Commission's job, under the full cognizance of the President and the Congress, is to ensure that the current terrorist threat is adequately met. I believe that we will be able to convince the Congress of this and to say enough in public to convince most of the public of this. But I fully expect that there will be ongoing criticism both from those who feel we are not doing enough, and will hold us to an absolute assurance of perfect protection standard, and from those who feel we are doing too much, and attributing to terrorists capabilities far beyond what they actually possess. As in the Cold War, we will err, if at all, on the high side. The integrated security strategy we seek to put in place, marrying the licensee's high assurance against a design basis threat and significant deterrence against beyond design basis threats, with State, local and Federal response capabilities against beyond-DBT threats will likely far exceed the security strategy for all other elements of our national infrastructure for a very long time to come. Obviously, it does so today. Some of you may feel that that is unfair. The nuclear industry has always been held to a higher standard than other industries. That is why the NRC exists. But it is not an absolute or perfection standard. I believe that we are striking the right balance here as we do in our safety regulation, but reasonable people may differ. That, as Chairman Diaz said yesterday, is the genius of a democratic society.

I have devoted all of my formal presentation to security matters today. I hope I will get questions on other matters, for despite our focus on security issues since September 11, I, as well as most of our staff, spend most of our time on the critical safety issues that are the core of our mission. Let me now open the floor to your questions.



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Office of Public Affairs

Telephone 301/415-820

Washington, DC 20555-0001

E-mail: opa@nrc.gov

Web Site: www.nrc.gov

No. S-03-011

The Annoyance of a Good Example

The Honorable Greta Joy Dicus
Commissioner

U.S. Nuclear Regulatory Commission
Regulatory Information Conference

Washington, DC
April 17, 2003

Good Morning everyone. As always, it is a pleasure to be here.

This conference is a great opportunity to exchange views, obtain the latest information, and network. When I first joined the Commission, attendance and interest in the Regulatory Information Conference was waning. There was some consideration to hold the conference every other year.

Seven years later, it is more than annual conference, it is an annual event. Most of the credit goes to Sam Collins and his staff, who have listened to feedback and initiated meaningful improvements in the RIC program. Thank you Sam and thanks to all who help make the RIC such a huge success.

This is the first conference in several years where the Commission is not at full strength. And I want to take this opportunity to publicly thank our former Chairman, Dick Meserve, for his leadership and vision.

As many of you know, moving towards risk-informed regulation is an important ongoing regulatory initiative. When I think in terms of risk and probability, it is highly likely that this is my last Regulatory Information Conference as an NRC Commissioner. As I reflect on my NRC

career, I am thankful to many people in this room - - from industry executives, to individual NRC staffers, and to NRC's most fervent critics. Thankful, not because you have made my job easier, but because you have made me better and most importantly, you have made the NRC a stronger organization.

Today, I will resist the temptation to discuss, in detail, security and safeguards. Clearly, it remains a high priority and focus. We have learned a tremendous amount since the events of September 11th about intelligence, interaction, and security. This broadening of security perspective has also introduced me to a new language - - the vernacular of the intelligence community. For example, a rumor is now "uncollaborated intelligence," someone who gossips is "a source with undetermined reliability" and a rumor, once it is determined to be false is, termed "noncredible."

So how do I make my potentially last speech at the RIC memorable?

On October 29, 1941, it was reported that Winston Churchill visited the Harrow School to hear traditional songs and speak to the students. The story goes that Churchill stood before the students and said, "Never, ever, ever, ever, ever, ever, give up. Never give up. Never give up" and then sat down. Short and memorable - if only you all could be so lucky. It turns out that the story came from "a source with undetermined reliability" and was "noncredible."

I do not intend to bore you with a timeline of NRC accomplishments. Although, I think, you would agree that the number of significant accomplishments over the past decade has outnumbered NRC accomplishments during any preceding similar timeframe. In my seven years on the Commission, we have sought many improvements in our regulatory processes and embarked on numerous reforms. I am proud of that record, proud of our staff and grateful to everyone here today who had a role in improving our regulatory process and helping to enhance our collective ability to ensure public health and safety.

Mark Twain once wrote: "Few things are harder to put up with than the annoyance of a good example." How many of us have been involved in a discussion or debate and then someone brings up an example that is almost irrefutable? You know what I am talking about - an example that singularly discredits our arguments or causes us to shift our focus from seeking to prevail to hoping for compromise. And, should we fail to realize what has happened when this "good example" is introduced and continue to advocate strongly for a contrary position, we can dig ourselves a shamelessly deep hole and discredit ourselves far more than the single "good example" ever could.

Over the past seven years, we have seen several "good examples." All "good examples" are not good experiences. For those that might argue that it cannot happen to me, I offer the examples of Millstone, DC Cook, and Davis-Besse. For those that suggest what we have is good enough or that we move too slowly, consider the improvements we have accomplished through the revised reactor oversight process and the license renewal process. For those that might say the NRC and industry do not focus on safety, take a look at the industry safety record over the past 20 years. For those of you that might suggest all we need to worry about is the domestic

energy sector, consider Chernobyl, or the events of September 11th and you will realize that we need to worry about much, much more than what is within our geographical boundaries.

You might know that every year the NRC Inspector General publishes the top challenges facing NRC. We have our challenges laid out for us. You may find we are challenged in ways not articulated by the Inspector General. This year I thought I might offer my insights, informed by seven years experience, of the most significant challenges facing the industry. I have no scientific basis and if you challenge my views with a "good example," I will not be annoyed. The three challenges that I would like to discuss with you can be characterized as the challenge of relationship, the challenge of engagement, and the challenge of mortality.

Relationship

In a maturing nuclear power industry, new nuclear plant designs are emerging; the transition to a risk-informed and performance-based regulatory structure is fast approaching; and licensees are submitting large numbers of applications for license renewal and power uprates. As the nuclear power industry moves forward and as the NRC moves toward improved regulatory processes, we must all remain ever mindful of our most important responsibility and principal duty -- safety.

The future of nuclear power depends on maintaining safety. While the industry's role is to operate safely by setting and maintaining high standards, even above those required by regulation, the NRC continues to provide stable and predictable processes, provide independent and vigorous oversight, and thus ensure that the public remains confident that we are a strong and effective regulator. Former Chairman Meserve indicated that viability of the nuclear option is absolutely dependent on the maintenance of safe operations. The NRC's -- and the industry's -- highest priority must be the protection of public health and safety. If we fail in ensuring safety, the emerging optimism about nuclear energy will quickly disappear. I agree.

Over the years, the industry's and NRC's role has evolved. Today, the NRC is called to interact increasingly with industry, Congress, State and Tribal representatives, other Federal agencies and interested public stakeholders. The key to these interactions is a strong relationship built on truth, trust, communication and mutual respect.

The post-September 11th security and safeguards environment has strained many relationships. The nature of dealing with sensitive security-related information often necessitates implementing our processes outside of public purview. When this happens communication wanes and trust is more difficult to maintain.

Many of you may have new relationships with the community, law enforcement, and other government agencies as a result of the response to the events of September 11th. The challenge is to forge these new relationships in a meaningful manner while building on the foundation of previous relationships. As with any life-changing event, there is potential for profound positive outcomes. I believe that all parties will emerge from this with a better

understanding of roles and responsibilities and ultimately perhaps different and better relationships.

I challenge each of you to evaluate these relationships. Is there a larger role for industry to play in stimulating two-way communication among stakeholders, for example? This evaluation will, of course, need to consider roles and objectives and how these relationships may affect or perceive to affect your desired outcomes. In general, almost everyone here can have a very powerful role in shaping relationships and the future of nuclear power.

Engagement

The next challenge is engagement. The challenge distills to two critical questions;

- Are you engaged in nuclear industry? and
- How are you using that engagement to improve safety?

Many may think that is ridiculously simple question, even some slight indignation. Of course we are engaged! But I would suggest engagement is a more complex and difficult journey, not solely defined by awareness, interest, or organizational position.

If you agree with me that our most important responsibility and principal duty is safety, then I believe you are compelled to think more broadly, think outside your individual facility, and think about your larger role. It is in defining this larger role, defining the organization responsibilities, understanding, sharing, and internalizing information and then changing to improve safety that epitomizes "engagement."

One simple metric of engagement is how you and your organization use operating experience, lessons learned or best practices. I believe that if we continue to learn the same lessons over-and-over again, we have learned very little. If we ignore best practices, we cannot become better. And, if you do not effectively seek and use operating experience to improve safety, you are not engaged.

The use of nuclear technology has a global impact and whether we are operating the technology, handling or safeguarding nuclear material, designing new plants, or providing independent oversight, we engender a responsibility that has implications beyond corporate boardrooms and Commission tables. Engagement is international.

There is an uncertainty in the future of nuclear power. An uncertainty that varies often by things we cannot control. For those things we can control, we are obliged to always do what is right. For but we can influence, we are similarly obligated to do what we can to foster an underlying responsibility to nuclear safety. Engagement positively influences safety.

I concluded that we must always remain open to new ideas, understand international and domestic experiences, and be supportive of international initiatives designed to improve nuclear safety. Mark Twain was insightful and we should be annoyed when we recognize good examples

of poor performance. I am reminded of the performance history of some of the US nuclear power plants - where good performing plants turned inward and did not keep pace with improving industry practices or lessons learned. In a short period of time they converted from good performers to "good examples." On a similar and broader scale, the NRC and the US nuclear industry cannot turn inward. We must remain open-minded, realize that we can learn, and consider how to participate more effectively and efficiently in national and international arenas that can improve safety.

At the beginning of this discussion on engagement, I asked two questions. If you thought that you and your organization are fully engaged, you may be right or - - your journey to engagement may be more difficult because you have an initial hurdle to overcome.

Mortality

By most measures, the nuclear power industry thrives today. It thrives for many reasons, not the least of which is the NRC's strong and independent oversight. I believe both NRC and the industry thrive today because they have faced their own mortality and made necessary changes.

"The report of my death was an exaggeration" so said Mark Twain. The same could be said by the NRC after its "near-death" experience in the late 1990's. Or even of the nuclear industry in the mid to late 90's when the plans and resources for decommissioning outnumbered plans and resources for new reactor designs. When the prognosis is bleak, the medicine is change.

We have found ways to deal with the mortality of equipment. We refurbish, upgrade, or replace. Equipment and material problems are often, not always, easy to identify and objectively monitor and are often preventable and always correctable.

People do not work like equipment. They are far more complex and temperamental. They are our greatest investment and our most treasured resource.

Whether there is resurgence of nuclear power or not, the changing nuclear workforce provides enormous management challenges that must be addressed today. The current inflow of new talent does not equal the outflow of experienced workers. Even when we are able to attract talented young men and women, the lack of upward mobility or lack of variety in career paths may result in segments of the workforce moving outside the nuclear area. Maintaining and cultivating core competencies in nuclear-related areas remains a key concern for the industry and the NRC. The downturn in other segments of the economy and the excitement about the future of nuclear power appears to contribute to an improved outlook for attracting new talent. But, the human capital crisis is not over. Demand still outpaces supply.

We must be pro-active and aggressive in seeking out talent early, training to best utilize their talent and planning smartly for what the future may bring. We need to be able to respond to emerging technology, deal with emerging issues, and deal effectively in the international

environment. Our credibility as an effective, competent regulator and the industry's credibility as effective and competent designers and operators hinges on maintaining a strong technical expertise.

The challenge is not just to recognize the finite nature of our resources. The challenge is to cultivate our resources - not just invest in them. Our most important resource is our people and their ingenuity and spirit. Churchill said, "Some regard private enterprise as if it were a predatory tiger to be shot. Others look upon it as a cow that they can milk. Only a handful see it for what it really is - the strong horse that pulls the whole cart." I challenge you to be part of that handful.

CONCLUSION

I hope you will accept the challenges before you as you have over the last seven years and longer. The three challenges, as with most challenges I have laid out, are sometimes easy to dismiss and more often difficult to achieve. The investment in addressing these challenges is noble and worthwhile.

So, thank you for listening today and, as always, thank you for being such a gracious audience. I wish you continued success and best wishes.



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Office of Public Affairs Telephone 301/415-820
Washington, DC 20555-0001 E-mail: opa@nrc.gov
Web Site: www.nrc.gov

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“What’s Communication Got to Do With It?”¹

The Honorable Jeffrey S. Merrifield
Commissioner
U.S. Nuclear Regulatory Commission

at the

2003 Regulatory Information Conference

Washington, D.C.
April 17, 2003

In almost every speech I deliver, I touch on the need to effectively communicate with the public, our stakeholders, and Congress. Now more than ever, we need to enhance our communication efforts. Whether we like it or not, in the wake of September 11th, the security of nuclear power plants has become a national concern and journalists across the world have looked at nuclear technologies with renewed interest. The NRC must be an effective voice in this dialogue. Elevated threats of terrorism continue to raise the concerns of citizens in the communities surrounding nuclear power facilities. The war in Iraq has understandably heightened these concerns.

In New York, a state hard hit by the events of September 11th, nuclear power is facing substantial challenges. Questions about emergency planning and security at Indian Point are frequent topics for local news stories. Let me be clear. The NRC has tried to address these concerns by holding meetings in New York communities, answering Congressional questions, and interacting with local officials. Despite the best of intentions, these efforts, for the most part have been met with criticism. In response to these difficulties, there are some who will say, you can never reach a

¹ With my apologies to Ms. Tina Turner

community that is not listening. I for one am more optimistic. I think that there is a "silent majority" in these communities that is willing to listen. We just have not found the best way to reach them.

We simply cannot allow confusion about safety and security at nuclear power plants to continue. It's absolutely not our responsibility to promote nuclear power, but I absolutely believe we have a responsibility to promote the role of the NRC. We work every day in communities across the nation to ensure protection of health, safety and the environment at nuclear facilities. The American people need to know this. Our efforts are especially important for communities like those in New York that remain particularly sensitive to the terrorist threat we face.

I have been searching for examples of best Communication practices for some time. Last summer you might remember I had a five-week hiatus between my appointments to the Commission. During that time I had the opportunity to interview representatives from private and public organizations to discuss various Communication methods. For example, canvassing local communities has been an effective tool for grass-roots organizations. While I think it might be downright frightening if governmental officials were to begin going door-to-door, I believe we can learn from these organizations. They deliver simple, effective messages to large and diverse community groups. It would be a tremendous public service if we could do the same.

I can identify unique communication challenges with almost every significant initiative that the NRC is facing in the near future and I am not only referring to external communication issues. Achieving effective internal communication poses equally difficult challenges for our agency. The Davis-Besse head degradation issue, for example, has raised questions about how well we communicate technical information within the Agency.

Davis-Besse

At this point, I'd like to focus on the Davis-Besse degradation issue. It has received a lot of attention already at this conference and certainly has had a major impact on the industry, the public, and the NRC in various ways. I believe this incident raises one of the most serious safety issues that we have faced in recent memory. In the 13 months since the discovery of the cavity in the reactor vessel head at Davis-Besse, the NRC and the industry have done some significant soul-searching to understand how this incident could have occurred. While a lot of attention, understandably, continues to be focused on the technical issues, today I want to focus more on the organizational breakdowns - communications and oversight.

The NRC employs the leading safety experts in the field, but technical knowledge alone will not overcome our inability to effectively communicate within our organization and with external stakeholders. I believe the cross-communication lapses associated with Davis-Besse were a failure of our organization and not an individual. During the months and years leading up to the discovery of the cavity, various elements of the NRC staff were working hard to monitor their piece of the regulatory program puzzle. The regional staff was overseeing the inspection activities and reviewing the licensee's performance at Davis-Besse, but they were challenged due to the increased focus on other problem plants that diverted their attention. The resident

inspectors were continuously monitoring the licensee's activities in accordance with the baseline inspection program, and headquarters staff was focused on supporting the licensing process activities. Each organization was doing its part, but in hindsight, without effectively engaging the other.

Our reviews tell us that the signs were all there: there was relevant foreign and domestic operational experience, symptoms and indications of reactor coolant system leakage from containment air coolers and containment radiation monitor filter element fouling, and results of specific NRC inspections, however, we failed to integrate all of this information. These were missed opportunities that have left the citizens of Ohio and Members of Congress questioning the NRC's oversight activities and capabilities.

Further complicating the issues surrounding Davis-Besse was the NRC's untimely documentation of its technical basis for allowing continued operation of the reactor until February 2002. It took the Commission staff a full year to document this decision. This left the Commission and the staff open to "Monday morning quarter-backing" by some external stakeholders and the media. Never mind the fact that the staff's decision, based on the available information at the time, about the extent of control rod drive cracking and its safety implications, was validated by the inspection results. The harm was already done and the staff was forced once again into a more reactive communications posture. The NRC must be more responsive and improve its ability to communicate agency decisions to external stakeholders. The unexpected and unprecedented discovery of the cavity in the Davis-Besse head and the NRC's untimely communication efforts prompted accusations that the NRC had caved in to the very industry it was responsible for regulating. This left the impression that economics had won out over safety. Nothing could be further from the truth and that is certainly not the message that should be sent to the American people. I assure you - safety always comes first.

As many of you are aware, the NRC formed a nine-person, lessons-learned task force that spent more than 7000 hours reviewing the NRC's regulatory processes and activities, and provided specific recommendations for areas of improvement which we plan to address. Not surprisingly, one-third of the task force recommendations are associated with improvements to inspection procedures and guidance. Although I believe the reactor oversight program is a significant improvement to its predecessor, this experience has shown that it is a living program that will continue to evolve and be enhanced. Clearly, it deserves further refinement and the Commission will devote the time and effort necessary to ensure that the communications and inspection process gaps that contributed to the unidentified multi-year degradation of the vessel head at Davis-Besse are thoroughly evaluated and corrected in a timely manner. As with most industries, there will always be new technical issues that may surface and need to be addressed. However, it is unacceptable to have all the signs yet not be able to read the writing on the wall.

Similarly, the industry must reflect on this experience and learn from it. The industry needs to review their own operating experience and communication processes to ensure these types of issues do not surface again. A single failure among the fleet can impact the entire industry and complacency due to success in past or current operating performance has no place in this business.

Many of you have heard me speak about complacency during my all hands meetings at the sites I visit. In this case, I believe complacency played a part in the incident at Davis-Besse. Davis-Besse for many years was a good operating plant, but that success led to overconfidence. In addition, somewhere along the way many of the people who worked at the plant were left with the impression that economic considerations overshadowed safety decisions. That is clearly the wrong focus and message to send.

Communications and oversight breakdowns have a devastating impact on public confidence in both the industry and the NRC. Thus, I challenge both the NRC staff as well as the Nuclear Energy Institute and its members to learn from this experience. We must ensure that we fully identify and fix the weaknesses identified in our programs and commit ourselves to institutionalizing these improvements so we do not repeat the very same mistakes in the future. It is my hope that this will not only result in a safety culture with a more questioning attitude, but also spur us to enhance the lines of communication within our organizations and more importantly with those outside. Our response and our actions to correct these failures and effectively communicate with the public will help to foster public confidence in the industry as operators and the NRC as a regulator. These are key to us moving forward.

Risk-informed Regulation

I believe another key to us moving forward is improving our ability to communicate with external stakeholders, namely the public, about our risk-informed initiatives. We have spent a significant amount of time and resources on these initiatives, to better align our work and our regulatory structure with those aspects that are more safety significant. I believe we need to continue with these initiatives and continue to look for ways to incorporate them further into our regulatory programs. However, when speaking about them we must be sensitive to how they are perceived. The public is left with the impression that these efforts are intended to deregulate and that safety is taking a back seat to cost. We need to take a step back and assess how we communicate safety and risk to the public that we serve.

All too often when we speak of risk-informing our regulations or our processes, it is inevitably tied to reducing unnecessary regulatory burden. While this certainly may be a result, it is not our primary objective. Unfortunately, our principal objective gets lost in the translation because our stakeholders focus on the words "reducing burden" which leaves the impression that we are reducing regulatory effectiveness. This is not the case. The fact is, our efforts to risk-inform our regulations have enhanced safety because they have allowed the NRC and our licensees to focus their resources on the most safety significant issues. A significant example which comes to mind is configuration management as a result of implementing the maintenance rule. I believe this has enhanced safety because it requires a licensee to assess and manage the increase in risk that may result from their planned maintenance activities prior to performing them. What we need to do is find better ways to communicate our objective and its result, which is to enhance safety.

This seems to be a recurring theme, but I will repeat the main message of what I said at the 27th Water Reactor Safety Information Meeting in 1999 and the 2002 International Topical Meeting on Probabilistic Safety Assessment, as I believe it continues to be relevant:

"We can have the most advanced risk insights, the best science, the leading experts in the field, but if we do not have an effective communication plan, we will fail. The only way the NRC and the nuclear industry will succeed in their efforts to risk-inform our regulations and use risk insights to reduce unnecessary burden is by learning to effectively communicate with the public and our other stakeholders about risk and its consequences. For most of our stakeholders and even some of our staff, risk is an unknown, a black box. Like many issues in science and technology, uncertainty by the public breeds apprehension, and apprehension breeds fear. Other stakeholders including some public interest groups and some members of Congress view our efforts to risk-inform our regulations with skepticism. They see these risk initiatives as just another ploy by the industry and the NRC to reduce regulatory requirements. Nothing could be further from the truth."

My message to you is simple and in plain English. Effective risk communication or should I say "safety communication" is vital. It is imperative that the NRC and industry discuss risk in a manner that brings greater understanding and confidence to our community of stakeholders. The cumulative effect of failures to communicate clearly will lead to a decrease in public confidence. We cannot take shortcuts in the area of communications.

Security Issues

The topic of security raises a whole host of other unique communication challenges for the agency. For security matters, there is no shortage of communications. Just to give you an indication of the extent of these communication efforts let me name some of the entities who have inquired about our work in this area: The United States House and Senate, the White House, the FBI, CIA, DIA, FEMA, Transportation Security Administration, Homeland Security Council, Department of Homeland Security, the Coast Guard, the Customs Service, the Department of Defense, the Department of Justice, the Department of Transportation as well as more state and local government agencies than I could list. Industry for their part will tell you we are not consulting with them as much as we should and the public, which is receiving even less information about the specifics, is even more dissatisfied.

For nuclear safety matters, the Commission is unquestionably the leading expert and voice for the Federal government. From root cause analysis to corrective action, there is scant interaction with other agencies. But, security issues are far different. Other Federal agencies have some interest in this area.

In fact, everybody seems to be an expert in the area of security. From the man on the street to the halls of Congress we have received a variety of suggestions on how to better secure civilian nuclear facilities. We typically never receive this type of advice on technical issues. For example, we had only three comments from public citizens on our rulemaking on Combustible Gas Control in Containment.

Unfortunately, while there is significantly more interest, we cannot inform the public of the details of our efforts to develop defensive strategies. So we are in a "trust me" mode and this certainly is met with skepticism. However, recent examples of security force responses to supposed threats should also serve to enhance public confidence. One recent example comes to mind. I am referring to the recent incident at Seabrook, involving a wayward wild turkey which triggered the plant's intrusion detection system and set off a series of security response actions. What's important to note is that off-site law enforcement and the on-site security force responded in a rapid and massive fashion to the unidentified intruder. This response should serve as a positive example to the American people that there is close coordination between licensees, local, State and Federal authorities and that they are committed to appropriately monitor and respond to security-related issues.

The challenge for this agency has been to effectively keep all of our Federal family in touch, the industry consulted, and the public informed. The most significant issue on everyone's mind is what is the appropriate level of security for a civilian nuclear power facility. I want to make one point clear. While unmistakably, the threat environment changed dramatically after September 11th, the Federal responsiveness to such threats and our ability to identify them have changed just as dramatically. The Federal government has taken a substantial role in protecting all of the nation's critical infrastructure. As a result, when we make our decision on the threat for which our licensees will be responsible, the so-called design basis threat, it will be with the full knowledge of the Federal government's efforts to prevent further acts of terror, including its efforts to prevent terrorists from entering the country, obtaining illegal weaponry, and commandeering commercial jetliners. From where I sit and given the intelligence information that I receive, I can say without hesitation that our nation is much more prepared to identify and address individuals who may wish to do us harm than we were a year and a half ago. These activities have most certainly reduced the likelihood of a terrorist act. The ability to respond to a terrorist action has also been enhanced by Federal actions to coordinate law enforcement efforts, such as those demonstrated at Seabrook.

In determining the design basis threat, we will also need to consider questions about the degree to which we should arm civilian guard forces. The response to certain threats should only be the responsibility of the Federal government, in coordination with state and local law enforcement officials. This is not a new concept. In 1968, the District of Columbia Court of Appeals endorsed the Commission's rationale for making certain actions, so-called acts of "enemies of the United States" not the responsibility of private civilian nuclear power plant operators. The Court set out three considerations in its analysis: "(1) the impracticability, particularly in the case of civilian industry, of anticipating accurately the nature of enemy attack and of designing defenses against it, (2) the settled tradition of looking to the military to deal with this problem, and the consequent sharing of its burdens by all citizens, and (3) the unavailability, through security classification or otherwise, of relevant information and the undesirability of ventilating what is available in public proceedings."² These principles still hold true today.

² Siegel v. AEC, 400 F.2d 778, 782 (D.C.Cir. 1968)(referred to as the Turkey Point decision, for the power plant proceeding in which the security issues were raised.)

Although in more recent years, the Commission has developed the design basis threat by focusing on those acts for which there is domestic capability and whether it would be practical for a licensee to protect against such acts, it never ignored the role of the Federal government. The level of previous Federal government involvement in national security matters was significantly different. The events of September 11th have prompted the Federal government to assume a significantly greater role in national security. Consequently, even where there might be domestic capability, we need to take a more sophisticated approach to these issues. Relying on the principles of the Turkey Point decision, we must recognize that certain security activities are now understood to be the responsibility of the defense establishment or agencies with internal security functions.

Force-on-force Exercises

The second security issue I would like to discuss today is force-on-force security exercises. Previously we conducted these exercises on a seven-year interval at each of our major licensed facilities. When the events of September 11th occurred, we required all of our facilities to go to an enhanced security posture and suspended force-on-force testing so that there would be no distraction from the ongoing security effort. Toward the middle of 2002, we initiated limited table top exercises as a means to evaluate security under the enhanced security requirements. Starting in February of 2003, the Commission authorized pilot force-on-force exercises utilizing enhanced security requirements. The intent of the Commission, once the design basis threat is redefined in the very near future, is to institute force-on-force exercises at each of our major facilities on a three-year basis with a requirement that licensees conduct their own drills on a yearly basis.

Since September 11, 2001, the Commission realized that our previous methods of conducting force-on-force drills were causing licensees to focus more on specific scenarios rather than a flexible defense, able to respond to an evolving threat. We are using the pilot programs to address methods to allow more flexibility on the part of the licensee to defend against a variety of attacks. The force-on-force exercises should be a test of the licensee's ability to defend its facilities and should push the envelope to probe for weaknesses. However, if enforcement will result after such exercises, I can understand a licensee's reluctance to participate in such a project. Before the Commission reinstates the full force-on-force exercises, the Commission should take a focused review of the regulatory aspects of these drills. The purpose of this exercise is to validate the security at the plants, not to issue a report card.

There is precedent for such action. The Department of Defense and the Department of Energy also conduct force-on-force exercises at selected facilities. The end result of these force-on-force exercises is not a regulatory enforcement decision but rather an identification of weaknesses and a schedule for corrective actions. In my personal view, when the NRC conducts force-on-force exercises, we should follow the lead of our fellow agencies and use the exercises to probe for weaknesses and not regulatory compliance.

I do support appropriate enforcement as related to our normal security reviews against the requirements in the regulations. But for force-on-force drills, a more appropriate action may be

to identify weaknesses and then put the solution in the corrective action program. As long as a licensee is satisfactorily addressing the issues in its corrective action program, there should be no need for enforcement action.

This is an issue which the Commission will need to address, one way or the other, when a final decision is reached on the force-on-force program.

Safety Culture

Much has been made of the importance of the commitment to safety at all levels of an organization. We all know that the concept of safety culture is very important to the safe and successful operation of nuclear power plants. The situation at Davis-Besse is yet another reminder of the importance of safety culture in nuclear power plant operations. A recurrent root cause finding of plants in difficulty is a breakdown or failure in the safety culture of the organization. The Commission, has chosen, and I think rightly so, not to directly regulate safety culture. This is something best left for each licensee to develop and implement. This is not intended to downplay, however, the importance that the Commission places on the regulated community to instill a safety culture at all levels of the organization or to suggest that NRC will not intervene, as appropriate. For example, the NRC is currently conducting a special inspection to evaluate the processes used at Davis-Besse to assess safety culture improvements.

That having been said, NRC must expect of itself what it expects of those whose activities we oversee and regulate. The NRC's Office of the Inspector General's "Safety Culture and Climate" survey of employees revealed that while 74 percent of NRC employees understand the goals and objectives of the NRC as an organization, NRC employees tend to be confused regarding the overall agency mission. The only item which showed a significant decrease from a similar survey conducted in 1998 was: "I believe NRC's commitment to public safety is apparent in what we do on a day-to-day basis." The survey also showed that less than half of NRC employees feel that management style encourages employees to give their best and only 43 percent of NRC employees feel that the NRC is highly regarded by the public. The one category where NRC scored statistically below the U.S. Research and Development Norm was *Continuous Improvement Commitment*, which assessed employee views on NRC's commitment to public safety and whether employees are encouraged to communicate ideas to improve safety/regulations/operations. I will be honest, in the four and a half years I have been on the Commission these were the most surprising and shocking results I have encountered.

I believe that the NRC has an effective regulatory program and the OIG survey overall reflects a workforce that envisions itself as the premier nuclear regulatory agency in the world today. Nevertheless, I am troubled by the survey results which identify that a majority of NRC employees feel that the Agency has not established a climate where traditional ways of doing things can be challenged or that innovative ideas can fail without penalty. I believe that the Commission must clearly articulate a vision for the agency. A vision is something which needs to come from the top, it must be endorsed strongly by the Commission, and it must be clearly stated and communicated to the staff, the regulated community and the public.

I envision the NRC being able to achieve excellence in regulating the safe, smart and secure use of nuclear materials for the public good while setting a standard for others to aspire. What does this mean? I believe that the Commission should set expectations to continually improve our regulatory programs to assure the safe use of nuclear materials, including the use of sound science to develop risk-informed and, where appropriate, performance-based regulations. We should also evaluate and use domestic and international operational experience and events to enhance our decision making. The Commission should foster innovation and empower NRC staff to identify enhancements to our regulatory programs. The Commission should also continue its efforts to create a work environment at the NRC which values differing opinions and rewards safety conscious thinking. We should also be in a position to anticipate challenges and be able to respond quickly to the changing regulatory and technical environment. It is my expectation that adopting these basic principles will instill a renewed vigor within the agency toward the vision of excellence in which all stakeholders will view the NRC as a fair, independent, open and efficient regulator.

An important element of a organization with an effective safety culture is establishing a safety conscious work environment. The Commission recently responded to recommendations from the staff on policy options for revising NRC's process for handling discrimination issues. The staff had established a Discrimination Task Force Group to review NRC's involvement in such matters and had recommended that the Commission pursue rulemaking for the oversight of a safety conscious work environment. The Commission unanimously rejected this proposal, but approved a number of streamlining recommendations proposed by the Discrimination Task Force Group. I am quite pleased that the Commission has endorsed the proposal to pursue alternative dispute resolution in cases of alleged intimidation and harassment. It is my impression that many of these cases result from a miscommunication between an employee and his or her management, which could be resolved satisfactorily through ADR prior to any NRC investigation. The staff will be proposing an ADR pilot program to the Commission. I would urge licensees to participate in the pilot program as way to determine the potential effectiveness of this alternative to resolving these issues. I also urge all interested stakeholders to review the Commission's direction to the staff and to work with the staff in developing guidance that would identify best practices to encourage a safety conscious work environment, including the emphasis for training management as to its obligations under the employee protection regulations and improving internal and external communications.

Conclusion

While I believe that we must meet the challenges of effective communications that face our agency, I am reminded of the old adage, "talk is cheap." Well it may seem cheap to some, but it can be worth measures if it allays concerns of the public, helps to identify a safety issue, or is used to achieve regulatory effectiveness.

Yet, it is clear, that we cannot just communicate our mission and goals, we have to ensure that our daily activities are directed toward efficiently meeting them. Indeed, effective external communication of a plan that is never implemented would be a significant detriment to public confidence.

I want to leave you with this final thought. The NRC's staff is extraordinary. Although it is always challenging for a technical agency to effectively communicate in a non-technical way, I believe that there is no other technical agency that has taken this challenge more seriously. This Regulatory Information Conference is one example of the staff's efforts in this respect. I want to thank them for their efforts, and thank you for allowing me to speak to you today.

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EA-03-070 - Salem 1 & 2 (PSEG Nuclear, LLC)

May 1, 2003

EA-03-070

Mr. Roy A. Anderson
Chief Nuclear Officer and President
PSEG Nuclear LLC - N09
P. O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: SALEM GENERATING STATION - NRC INSPECTION REPORT 50-272/02-010 AND 50-311/02-010 - FINAL SIGNIFICANCE DETERMINATION FOR A WHITE FINDING AND NOTICE OF VIOLATION

Dear Mr. Anderson:

The purpose of this letter is to provide you with the final results of our significance determination of the preliminary white finding identified in the subject inspection report dated March 14, 2003, and further discussed in a subsequent letter from Mr. Wayne D. Lanning, NRC to Mr. Harold W. Keiser, PSEG Nuclear LLC, dated March 31, 2003. This inspection finding was assessed using the significance determination process and was preliminarily characterized as white, i.e., a finding with low to moderate importance to safety, which may require additional NRC inspections. This white finding involved ineffective implementation of corrective actions to prevent recurrent EDG turbocharger failures.

In a telephone conversation with Mr. Glenn Meyer of NRC, Region I, on April 14, 2003, Mr. Gabe Salamon of your staff indicated that PSEG Nuclear LLC did not contest the characterization of the risk significance of this finding, declined an opportunity to discuss this finding in a Regulatory Conference and would not be providing a written response.

After considering the information developed during the inspection, the NRC has concluded that the inspection finding is appropriately characterized as white, i.e., a finding with low to moderate importance to safety, which may require additional NRC inspections.

You have 30 calendar days from the date of this letter to appeal the staff's determination of significance for the identified white finding. Such appeals will be considered to have merit only if they meet the criteria given in NRC inspection Manual Chapter 0609, Attachment 2.

The NRC has also determined that the failure to preclude repetition of the EDG turbocharger failures is a violation of 10 CFR 50, Appendix B, Criterion XVI, as cited in the enclosed Notice of Violation (Notice). The circumstances surrounding the violation are also described in detail in the subject inspection report. In accordance with the NRC Enforcement Policy, NUREG-1600, the Notice of Violation is considered escalated enforcement action because it is associated with a white finding. You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response.

Because plant performance for this finding has been determined to be in the regulatory response band, we will use the NRC Action Matrix to determine the most appropriate NRC response for this event. We will notify you by separate correspondence of that determination.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its

enclosures, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

If you have any questions please contact Mr. James Linville of my staff at 610-337-5129.

Sincerely,

/RA/ James T. Wiggins Acting For

Hubert J. Miller
Regional Administrator

Enclosure: Notice of Violation

Docket Nos.: 50-272; 50-311
License Nos.: DPR-70; DPR-75

cc w/encl:

M. Friedlander, Director - Business Support
J. Carlin, Vice President - Engineering
D. Garchow, Vice President - Projects and Licensing
G. Salamon, Manager - Licensing
T. O'Connor, Vice President - Operations
R. Kankus, Joint Owner Affairs
J. J. Keenan, Esquire
Consumer Advocate, Office of Consumer Advocate
F. Pompper, Chief of Police and Emergency Management Coordinator
M. Wetterhahn, Esquire
State of New Jersey
State of Delaware
N. Cohen, Coordinator - Unplug Salem Campaign
E. Gbur, Coordinator - Jersey Shore Nuclear Watch
E. Zobian, Coordinator - Jersey Shore Anti Nuclear Alliance

NOTICE OF VIOLATION

PSEG Nuclear LLC
Salem Generating Station
Units 1 and 2

Docket Nos.: 50-272; 50-311
License Nos.: DPR-70; DPR-75
EA-03-070

During an NRC inspection conducted between September 16, 2002 - January 30, 2003, the results of which were discussed at an exit meeting on January 30, 2003, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

10 CFR 50 Appendix B, Criterion XVI, states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, in 1990 and 1998, significant conditions adverse to quality were identified involving emergency diesel generator turbocharger compressor failures for two of the six emergency diesel generators, and the licensee did not take appropriate corrective actions to preclude repetition, as evidenced by the following examples:

1. after a failure in 1990 of the 2B EDG turbocharger because of a compressor end blade failure, corrective actions were developed to perform non-destructive examination (NDE) of turbocharger rotating elements every four refueling outages; however, this NDE was never scheduled or conducted; and
2. after a failure in 1998 of the 2A EDG turbocharger, although action was initiated to perform vibration monitoring of the turbochargers, this action was not effective in that no action levels for evaluating and mitigating increased vibration were established. In addition, due to the manner in which vibration data was collected, the licensee was unable to perform trending of the data to identify degrading turbocharger conditions.

Subsequently, the 1C EDG turbocharger failed on September 13, 2002, because of a fatigue induced failure of a compressor blade.

This violation is associated with a White Significance Determination Process finding.

Pursuant to the provisions of 10 CFR 2.201. PSEG Nuclear, LLC is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region I, and a copy to the NRC Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation - EA-03-070" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.htm> (the Public Electronic Reading Room). If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 1st day of May 2003

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NOED-03-3-004 - LaSalle 1 (Exelon Generation Company)

April 14, 2003

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: NOTICE OF ENFORCEMENT DISCRETION FOR EXELON GENERATION COMPANY REGARDING LASALLE COUNTY STATION, UNIT 1 (NOED 03-3-004)

Dear Mr. Skolds:

By letter dated April 11, 2003, you requested that the NRC exercise discretion not to enforce compliance with the actions required in Technical Specifications (TS) 3.8.4, "DC Sources-Operating" and 3.8.7, "Distribution Systems - Operating." This Notice of Enforcement Discretion (NOED) request was made because the Unit 1 Division 2 125 Vdc Battery Charger was experiencing voltage and amperage fluctuations. Your letter documented information previously discussed with the NRC in telephone conferences that occurred on April 8 and 9, 2003. At the time of these telephone conferences, both LaSalle Units were operating in Mode 1 at 100 percent power and stable.

The principal NRC staff members who participated in the telephone conference included: Steven Reynolds, Deputy Director, Division of Reactor Projects (DRP), RIII; Bruce Burgess, Branch Chief, Reactor Projects Branch 2, DRP, RIII; Ronald Gardner, Chief, Electrical Engineering Branch, Division of Reactor Safety (DRS), RIII; Michael Parker, Senior Reactor Analyst, DRS, RIII; Daniel Kimble, Senior Resident Inspector, LaSalle; Doug Eskins, Resident Inspector, LaSalle; Lakshminaras Raghavan, Acting Director, Project Directorate-III, Division of Licensing Project Management (DLPM), Office of Nuclear Reactor Regulation (NRR); Bill Macon, Project Manager, DLPM, NRR; Mike Franovich, Probabilistic Risk Assessment Branch, Division of Systems, Safety, and Analysis, NRR; and Saba Saba, Electrical Engineering Branch, Division of Engineering, NRR.

Your staff requested enforcement discretion to preclude entry into the shutdown action statement requiring that Unit 1 be in hot shutdown within 12 hours after the expiration of the allowable outage time (all times discussed in this letter refer to Central (CDT) time). Your staff requested that the 2-hour allowed outage times for TS 3.8.4 and TS 3.8.7 be extended by 12 hours based on your evaluation indicating no increase in risk for continued operation versus a plant shutdown. With this extended allowed outage time, Unit 1 would be required to enter the shutdown action statement immediately following expiration of the 12 hour action statement extension or when repair activities were determined to be unsuccessful and the Unit 1 Division 2 125 Vdc Battery Charger was determined to remain inoperable. Upon entry into the shutdown action statement, you were required to immediately commence a controlled, orderly shutdown and be in hot shutdown within 12 hours, as specified by the LaSalle Unit 1 TS.

LaSalle Unit 1 TS 3.8.4. allows the Division 1 or 2 125 Vdc electrical power subsystem to be inoperable for 2 hours. If operability cannot be restored, the Required Action E.1 requires that the unit be in Mode 3 (hot shutdown) in 12 hours and Required Action E.2 requires the Unit to be in Mode 4 (cold shutdown) in the following 36 hours. LaSalle Unit 1 TS 3.8.7, Condition B allows Division 1 or 2 125 Vdc electrical power subsystem to be inoperable for 2 hours. If operability

cannot be restored, the Required Action D.1 requires Unit 1 to be in Mode 3 in 12 hours and Required Action D.2 require Unit 1 to be in Mode 4 in 36 hours.

During plant operation, it was identified that the Unit 1 Division 2 125 Vdc battery charger ampere output and voltage were fluctuating. To perform repairs on the battery charger, it was necessary to render the battery charger and associated battery inoperable. At approximately 12:25 p.m. on April 9, 2003, your staff requested enforcement discretion to preclude a required entry into the shutdown action statement requiring Unit 1 to be in Mode 3 (hot shutdown) within 12 hours required by the TS. Specifically, you requested that the 2-hour allowed outage time for TS 3.8.4 and 3.8.7 for Unit 1 be extended by 12 hours. The 12-hour extension was based on the estimated time that would be needed to repair and test 3 circuit cards suspected to be the cause of the voltage and amperage fluctuations occurring on the Unit 1 Division 2 battery charger. At 5:42 p.m. on April 9, 2003, the licensee entered TS 3.8.4 and TS 3.8.7 to perform planned repairs to the Unit 1 Division 2 125 Vdc battery charger. At this time, it was necessary to receive an NOED from the 2 hour action statement to allow for replacement and testing of three solid state cards within the Unit 1 Division 2 battery charger.

Your staff requested this NOED after consideration of the safety significance and potential consequences of such an action. Your staff performed a risk evaluation and compared the risk of plant operation with the risk associated with a Unit 1 shutdown and cycling the plant through a thermal transient. The results of the evaluation indicated that there was no net increase in risk associated with extending the allowed outage times for TS 3.8.4 and 3.8.7 by 12 hours.

As for compensatory measures, during the time that the Unit 1 Division 2 battery charger was inoperable, your staff committed to the following: (1) operating crews on-shift during the period of this discretion will be briefed on the current conditions and the provisions of this request; (2) the Unit 1, Division 2 DC system voltage will be monitored hourly via a special log; (3) the Unit 1, Division 2 battery will maintain a full charge greater than or equal to 128 Vdc; (4) work schedules were reviewed and adjusted to ensure no other safety related equipment will be removed from service for planned maintenance or surveillance testing unless required by Technical Specifications; additionally, the Primary Containment Hydrogen Recombiners, Standby Gas Treatment, and Control Room Area Filtration and Ventilation Air Conditioning Systems will not be removed from service or planned maintenance or surveillance testing unless required by the TS during the period of this NOED; (5) should the temporary charger fail, another temporary charger is available to be promptly installed to maintain the Unit 1 Division 2 battery at a full charge greater than or equal to 128 Vdc; (6) the Division 1 and opposite unit Division 2 DC electrical power distribution system will be protected by posting, shift briefings, discussed at the Plan of the Day meetings, and walkdowns twice per shift of the protected areas by non-licensed operators and field supervisors; (7) the Unit 1 Division 1 AC electrical power distribution system will be protected by postings, shift briefings, discussed at the Plan of the Day meeting, and walkdowns twice per shift of the protected areas by non-licensed operation and field supervisors; (8) appropriate operators and electrical maintenance personnel will be briefed on clearance orders and procedures necessary to cross-tie Unit 1 Division 2 125 Vdc as a contingency should a loss of offsite power occur on Unit 1; (9) activities will be restricted in the electrical switchyard to minimize the possibility of an induced loss of offsite power. The licensee verified that there are no abnormal weather patterns or conditions expected during the period of this NOED that would adversely impact the electrical switchyard or Commonwealth Edison electrical power grid; and (10) Nuclear Oversight independently validated the compensatory actions.

The NRC's basis for this discretion considered: (1) the availability of the other power supplies to the Unit 1 Division 2 battery, including temporary battery chargers connected to non-class 1E and class IE power supplies; (2) the repair plan for the Unit 1 Division 2 battery charger including contingency actions if the repair activities were unsuccessful; (3) the compensatory measures to reduce the probability of a plant transient while ensuring the availability of other safety-related equipment; (4) the risk attributed to the loss of the Unit 1 Division 2 battery charger; and (5) the risk assessment of the condition indicated that the risk of continued operation while extending the allowed outage time by 12 hours was less than the risk associated with performing a plant shutdown.

Based on the above considerations, the NRC staff concluded that Criterion B.2.1.1.a and the applicable criteria in Section C.4 to NRC Manual Chapter 9900, "Technical Guidance, Operations - Notices of Enforcement Discretion" were met. Criterion B.2.1.1.a states that for an operating plant, the NOED is intended to avoid unnecessary transients as a result of compliance with the

license condition and, thus, minimize potential safety consequences and operational risks.

On the basis of the NRC staff's evaluation of your request, we have concluded that issuance of this NOED is consistent with the Enforcement Policy and staff guidance, and had no adverse impact on public health and safety. Therefore, we verbally approved the exercise of discretion at 2:00 p.m. on April 9, 2003, not to enforce compliance with Unit 1 TS 3.8.4 and TS 3.8.7 and instead extended the action statement for both TS from 2 hours to 12 hours or when repair activities were determined to be unsuccessful and the Unit 1 Division 2 125 Vdc Battery Charger was determined to remain inoperable. As stated above, the verbal approval was granted contingent upon declaration of the Unit 1 Division 2 battery charger inoperable and a commencement of repair activities. At 5:42 p.m. on April 9, 2003, the Unit 1 Division 2 battery charger was declared inoperable and the NOED extended outage clock began. We understand that on April 10, 2003, at 3:20 a.m., post maintenance testing of the Unit 1 Division 2 battery charger was completed. At that time, the conditions of the NOED were fulfilled and the NOED was no longer in effect. At 4:07 p.m. on April 10, 2003, you declared the Unit 1, Division 2 125 Vdc battery charger operable. At that time, Unit 2 exited TS 3.8.4 and 3.8.7.

As stated in the Enforcement Policy, action may be taken, to the extent that violations were involved, for the root cause that led to the noncompliance for which this NOED was necessary.

Sincerely,

/RA by Steven A. Reynolds Acting for/

Geoffrey E. Grant, Director
Division of Reactor Projects

Docket Nos. 50-373
License Nos. NFF-11

cc:
Site Vice President - LaSalle County Station
LaSalle County Station Plant Manager
Regulatory Assurance Manager - LaSalle
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional
Operating Group
Vice President - Mid-West Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional
Operating Group
Manager Licensing - Clinton and LaSalle
Senior Counsel, Nuclear, Mid-West Regional
Operating Group
Document Control Desk - Licensing
M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer
Chairman, Illinois Commerce Commission

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Last revised Wednesday, April 16, 2003

April 29, 2003

EA-03-038

Holders of Licenses for Operating
Power Reactors as listed in
Enclosure 2

**SUBJECT: ISSUANCE OF ORDER FOR COMPENSATORY MEASURES RELATED TO
FITNESS-FOR-DUTY ENHANCEMENTS APPLICABLE TO NUCLEAR
FACILITY SECURITY FORCE PERSONNEL**

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Order that modifies the current license for your facility to require compliance with the specified compensatory measures (CMs). The Order applies to all Addressees listed in Enclosure 2 (Attachment 1 to the enclosed Order). The CMs are listed in Enclosure 3 (Attachment 2 to the enclosed Order).

The Commission recognizes that you have voluntarily and responsibly implemented additional security measures following the events of September 11, 2001. However, work hour demands on security force personnel have increased substantially over the past 18 months, and the current terrorist threat environment continues to require heightened security measures. Therefore, the Commission has determined that the security measures addressed by the enclosed CMs should be implemented by licensees as prudent measures to address issues that may arise from fatigue of nuclear facility security force personnel. The Commission has determined that the enclosed Order should be effective immediately.

This Order does not obviate the need for licensees to continue to meet the objectives of the current security protective measures level described in NRC Regulatory Issue Summary 2002-12A, "Power Reactors NRC Threat Advisory and Protective Measures System," as promulgated by updated security advisories. Licensees must also continue to maintain the effectiveness of existing security measures taken in response to the events of September 11, 2001, and the Order issued on February 25, 2002. The requirements will remain in effect until the Commission determines otherwise.

The enclosed Order requires responses and actions within specified time frames. Please contact your Licensing Project Manager to facilitate resolution of any issues related to compliance with the requirements in the enclosed Order, or if you have any other questions.

The enclosed Order has been forwarded to the Office of the Federal Register for publication.

Sincerely,

IRA

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Docket Nos. As shown in Order Attachment 1 - Addressee List

Enclosures: 1. Order
2. Order Attachment 1 - Addressee List
3. Order Attachment 2 - Compensatory Measures Regarding Fitness-for-Duty Requirements Applicable to Security Force Personnel

cc: See next page *

* For a complete listing of all parties cc'd, see ADAMS Accession number ML030850429. In order to reduce the size and weight of documents mailed, the enclosed service list is associated with the specific facility noted.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
ALL OPERATING POWER REACTOR) Docket Nos. (as shown in Attachment 1)
LICENSEES) License Nos. (as shown in Attachment 1)
EA-03-038

**ORDER MODIFYING LICENSES
(EFFECTIVE IMMEDIATELY)**

I.

The licensees identified in Attachment 1 to this Order hold licenses issued by the U.S. Nuclear Regulatory Commission (NRC or Commission) authorizing operation of nuclear power plants in accordance with the Atomic Energy Act of 1954 and Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50. Commission regulations at 10 CFR 50.54(p)(1) require these licensees to maintain safeguards contingency plan procedures in accordance with 10 CFR Part 73, Appendix C. Specific safeguards requirements for reactors are contained in 10 CFR 73.55.

II.

On September 11, 2001, terrorists simultaneously attacked targets in New York, N.Y., and Washington, D.C., utilizing large commercial aircraft as weapons. In response to the attacks and intelligence information subsequently obtained, the Commission issued a number of Safeguards and Threat Advisories to its licensees in order to strengthen licensees' capabilities and readiness to respond to a potential attack on a nuclear facility. On

February 25, 2002, the Commission issued Orders to the licensees of operating power reactors to put the actions taken in response to the Advisories in the established regulatory framework and to implement additional security enhancements which emerged from the NRC's ongoing comprehensive security review.

Work hour demands on nuclear facility security force personnel have increased substantially since the September 11, 2001 attacks and the current threat environment continues to require heightened security measures. The Commission has determined that the security measures addressed by the enclosed compensatory measures are required to be implemented by licensees as prudent measures to address issues that may arise from work-hour related fatigue of nuclear facility security force personnel. Therefore, the Commission is imposing requirements, as set forth in Attachment 2 of this Order, on all licensees of these facilities. These requirements, which supplement existing regulatory requirements, will provide the Commission with reasonable assurance that the public health and safety and common defense and security continue to be adequately protected. These requirements will remain in effect until the Commission determines otherwise.

In order to provide assurance that licensees are implementing prudent measures to achieve a consistent level of protection, all licenses identified in Attachment 1 to this Order shall be modified to include the requirements identified in Attachment 2 to this Order. In addition, pursuant to 10 CFR 2.202, the NRC finds that in the circumstances described above, the public health, safety and interest require that this Order be immediately effective.

Accordingly, pursuant to Sections 103, 104, 161b, 161i, 161o, 182 and 186 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR 2.202

and 10 CFR Parts 50 and 73, IT IS HEREBY ORDERED, **EFFECTIVE IMMEDIATELY**, THAT ALL LICENSES IDENTIFIED IN ATTACHMENT 1 TO THIS ORDER ARE MODIFIED AS FOLLOWS:

- A. All Licensees shall, notwithstanding the provisions of any Commission regulation or license to the contrary, comply with the requirements described in Attachment 2 to this Order except to the extent that a more stringent requirement is set forth in the Licensees' security plans. The Licensees shall immediately start implementation of the requirements in Attachment 2 to the Order and shall complete implementation **no later than October 29, 2003**.
- B. 1. All Licensees shall, within **thirty-five (35) days** of the date of this Order, notify the Commission, (1) if they are unable to comply with any of the requirements described in Attachment 2, (2) if compliance with any of the requirements is unnecessary in their specific circumstances, or (3) if implementation of any of the requirements would cause the Licensee to be in violation of the provisions of any Commission regulation or the facility license. The notification shall provide the Licensee's justification for seeking relief from or variation of any specific requirement.
2. Any Licensee that considers that implementation of any of the requirements described in Attachment 2 to this Order would adversely impact safe operation of the facility must notify the Commission, within **thirty-five (35) days** of this Order, of the adverse safety impact, the basis for its determination that the requirement has an adverse safety impact, and either a proposal for achieving

the same objectives specified in the Attachment 2 requirement in question, or a schedule for modifying the facility to address the adverse safety condition. If neither

approach is appropriate, the Licensee must supplement its response to Condition B.1 of this Order to identify the condition as a requirement with which it cannot comply, with attendant justifications as required in Condition B.1.

- C. 1. All Licensees shall, within **thirty-five (35) days** of the date of this Order, submit to the Commission, a schedule for achieving compliance with each requirement described in Attachment 2.
- 2. All Licensees shall report to the Commission when they have achieved full compliance with the requirements described in Attachment 2.
- D. Notwithstanding the provisions of 10 CFR 50.54(p), all measures implemented or actions taken in response to this Order shall be maintained until the Commission determines otherwise.

Licensees' responses to Conditions B.1, B.2, C.1, and C.2 above, shall be submitted in accordance with 10 CFR 50.4. In addition, Licensees' submittals that contain Safeguards Information shall be properly marked and handled in accordance with 10 CFR 73.21.

The Director, Office of Nuclear Reactor Regulation may, by letter, relax or rescind any of the above conditions upon demonstration by the Licensee of good cause.

In accordance with 10 CFR 2.202, the Licensee must, and any other person adversely affected by this Order may, submit an answer to this Order, and may request a hearing on this Order, within thirty-five (35) days of the date of this Order. Where good cause is shown, consideration will be given to extending the time to request a hearing. A request for extension of time in which to submit an answer or request a hearing must be made in writing to the

Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and include a statement of good cause for the extension. The answer may consent to this Order. Unless the answer consents to this Order, the answer shall, in writing and under oath or affirmation, specifically set forth the matters of fact and law on which the Licensee or other person adversely affected relies and the reasons as to why the Order should not have been issued. Any answer or request for a hearing shall be submitted to the Secretary, Office of the Secretary of the Commission, U.S. Nuclear Regulatory Commission, ATTN: Rulemakings and Adjudications Staff, Washington, DC 20555. Copies also shall be sent to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555; to the Assistant General Counsel for Materials Litigation and Enforcement at the same address; to the Regional Administrator for NRC Region I, II, III, or IV, as appropriate for the specific facility; and to the Licensee if the answer or hearing request is by a person other than the Licensee. Because of possible disruptions in delivery of mail to United States Government offices, it is requested that answers and requests for hearing be transmitted to the Secretary of the Commission either by means of facsimile transmission to 301-415-1101 or by e-mail to hearingdocket@nrc.gov and also to the Office of

the General Counsel either by means of facsimile transmission to 301-415-3725 or by e-mail to OGCMailCenter@nrc.gov. If a person other than the licensee requests a hearing, that person shall set forth with particularity the manner in which his interest is adversely affected by this Order and shall address the criteria set forth in 10 CFR 2.714(d).

If a hearing is requested by the Licensee or a person whose interest is adversely affected, the Commission will issue an Order designating the time and place of any hearing. If a hearing is held, the issue to be considered at such hearing shall be whether this Order should be sustained.

Pursuant to 10 CFR 2.202(c)(2)(i), the Licensee may, in addition to demanding a hearing, at the time the answer is filed or sooner, move the presiding officer to set aside the immediate effectiveness of the Order on the ground that the Order, including the need for immediate effectiveness, is not based on adequate evidence but on mere suspicion, unfounded allegations, or error.

In the absence of any request for hearing, or written approval of an extension of time in which to request a hearing, the provisions specified in Section III above shall be final thirty-five (35) days from the date of this Order without further order or proceedings. If an extension of time for requesting a hearing has been approved, the provisions specified in Section III shall be final when the extension expires if a hearing request has not been received. AN ANSWER OR A REQUEST FOR HEARING SHALL NOT STAY THE IMMEDIATE EFFECTIVENESS OF THIS ORDER.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated this 29th day of April 2003

- Attachments: 1. List of Addressees
2. Compensatory Measures

ADDRESSEE LIST

Michael R. Higgins
Superintendent of Plant Security
Arkansas Nuclear One, Units 1 & 2
Entergy Operations, Inc.
Docket Nos. 50-313 & 50-368
License Nos. DPR-51 & NPF-6
1448 S.R. 333
Russellville, AR 72802

Mark Bezilla
Vice President
Beaver Valley Power Station, Units 1 & 2
FirstEnergy Nuclear Operating Company
Docket Nos. 50-334 & 50-412
License Nos. DPR-66 & NPF-73
Route 168
Shippingport, PA 15077-0004

Gregory Baker
Braidwood Station, Units 1 & 2
Exelon Generation Company, LLC
Docket Nos. STN 50-456 & STN 50-457
License Nos. NPF-72 & NPF-77
35100 S. Rt. 53, Suite 84
Braceville, IL 60407

Ashok S. Bhatnagar
Site Vice President
Browns Ferry Nuclear Plant, Units 1, 2, & 3
Tennessee Valley Authority
Docket Nos. 50-259, 50-260 & 50-296
License Nos. DPR-33, DPR-52 & DPR-68
Intersection Limestone Country Roads
20 and 25
Athens, AL 35611

Allen Brittain
Security Manager
Brunswick Steam Electric Plant, Units 1 & 2
Progress Energy
Docket Nos. 50-325 & 50-324
License Nos. DPR-71 & DPR-62
Hwy 87, 2.5 Miles North
Southport, NC 28461

David Combs
Byron Station, Units 1 & 2

OFFICIAL RECORD COPY

7590-01-P

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
ALL OPERATING POWER REACTOR) Docket Nos. (as shown in Attachment 1)
LICENSEES) License Nos. (as shown in Attachment 1)
EA-03-086

**ORDER MODIFYING LICENSES
(EFFECTIVE IMMEDIATELY)**

I.

The licensees identified in Attachment 1 to this Order hold licenses issued by the U.S. Nuclear Regulatory Commission (NRC or the Commission) authorizing operation of nuclear power plants in accordance with the Atomic Energy Act of 1954 and Title 10 of the *Code of Federal Regulations* (10 C.F.R.) Part 50. Commission regulations at 10 C.F.R. § 50.54(p)(1) require these licensees to maintain safeguards contingency plan procedures in accordance with 10 C.F.R. Part 73, Appendix C. Specific safeguards requirements for reactors are contained in 10 C.F.R. § 73.55.

II.

On September 11, 2001, terrorists simultaneously attacked targets in New York, N.Y., and Washington, D.C., utilizing large commercial aircraft as weapons. In response to the attacks and intelligence information subsequently obtained, the Commission issued a number of Safeguards and Threat Advisories to its licensees, and eventually Orders to selected licensees, to strengthen licensees' capabilities and readiness to respond to a potential attack

on a nuclear facility. The Commission has also communicated with other Federal, State and local government agencies and industry representatives to discuss and evaluate the current threat environment in order to assess the nature of the current threat. In addition, the Commission has been conducting a comprehensive review of its safeguards and security programs and requirements. As part of this review, the Commission issued Orders to the licensees of all operating power reactors on February 25, 2002, to implement interim compensatory measures (ICMs) to enhance physical security of licensed operations at these facilities. In addition, the Commission issued Orders to all operating power reactor licensees on January 7, 2003, to enhance access authorization requirements.

As a result of information provided by the intelligence community concerning the nature of the threat and the Commission's assessment of this information, the Commission has determined that a revision is needed to the Design Basis Threat (DBT) specified in 10 C.F.R. § 73.1. Therefore, the Commission is imposing a revised DBT, as set forth in Attachment 2¹ of this Order, on all operating power reactor licensees. The revised DBT, which supercedes the DBT specified in 10 C.F.R. § 73.1, provides the Commission with reasonable assurance that the public health and safety and common defense and security continue to be adequately protected in the current threat environment. The requirements of this Order remain in effect until the Commission determines otherwise. To address the DBT set forth in Attachment 2 of this Order, all licensees must revise their physical security plans, safeguards contingency plans, and guard training and qualification plans that are required by 10 C.F.R. §§ 50.34(c), 50.34(d), and 73.55(b)(4)(ii), respectively.

In order to provide assurance that licensees are implementing prudent measures to protect against the revised DBT, all licenses identified in Attachment 1 to this Order shall be

¹ Attachment 2 contains safeguards information and will not be released to the public.

modified to require that the physical security plans, safeguards contingency plans, and the guard training and qualification plans required by 10 C.F.R. §§ 50.34(c), 50.34(d), and 73.55(b)(4)(ii) be revised to provide protection against this revised DBT. Consistent with the provisions of 10 C.F.R. § 73.55(a), the licensee may provide measures for protection against the DBT specified in Attachment 2 to this Order other than those required by 10 C.F.R. § 73.55 if the licensee demonstrates: (1) that the measures have the same high assurance objective as specified in 10 C.F.R. § 73.55(a); and (2) that the overall level of system performance provides protection against the DBT specified in Attachment 2 to this Order equivalent to that which would be provided by 10 C.F.R. §§ 73.55(b) through (h) and meets the general performance requirements of 10 C.F.R. § 73.55. Upon completion of NRC review and approval of the revised physical security plans, including pertinent requirements of the Order issued on February 25, 2002, safeguards contingency plans, and guard training and qualification plans, and their full implementation, the Commission will consider requests to relax or rescind, either in whole or in part, the requirements of the Order issued on February 25, 2002, imposing ICMs. In addition, pursuant to 10 C.F.R. § 2.202, I find that in the circumstances described above, the public health, safety, and interest and the common defense and security require that this Order be immediately effective.

III.

Accordingly, pursuant to Sections 103, 104, 161b, 161i, 161o, 182, and 186 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 C.F.R. § 2.202 and 10 C.F.R. Parts 50 and 73, IT IS HEREBY ORDERED, **EFFECTIVE IMMEDIATELY**, THAT ALL LICENSES IDENTIFIED IN ATTACHMENT 1 TO THIS ORDER ARE MODIFIED AS FOLLOWS:

- A. 1. All licensees shall, notwithstanding the provisions of any Commission regulation, license, or order to the contrary, revise their physical security plans and safeguards contingency plans, prepared pursuant to 10 C.F.R. §§ 50.34(c) and 50.34(d), to provide protection against the DBT set forth in Attachment 2 to this Order. In addition, all licensees shall, notwithstanding the provisions of any Commission regulation, license, or order to the contrary, revise their guard training and qualification plans, required by 10 C.F.R. § 73.55(b)(4)(ii), to implement the DBT set forth in Attachment 2 to this Order. The licensees shall submit the revised physical security plans, safeguards contingency plans, and guard training and qualification plans, including an implementation schedule, to the Commission for review and approval **no later than April 29, 2004.**
2. The revised physical security plans, revised safeguards contingency plans, and revised guard training and qualification plans, must be fully implemented by the licensees **no later than October 29, 2004.**
- B. 1. All licensees shall, within **thirty-five (35) days** of the date of this Order, notify the Commission, (1) if they are unable to comply with any of the requirements of this Order, (2) if compliance with any of the requirements is unnecessary in their specific circumstances, or (3) if implementation of any of the requirements would cause the licensee to be in violation of the provisions of any Commission regulation or the facility license. The notification shall provide the licensee's justification for seeking relief from, or variation of, any specific requirement.
2. Any licensee that considers that implementation of any of the requirements of this Order would adversely impact safe operation of the facility must notify the Commission, within **thirty-five (35) days** of this Order, of the adverse safety

impact, the basis for its determination that the requirement has an adverse safety impact, and either a proposal for achieving the same objectives of this Order, or a schedule for modifying the facilities to address the adverse safety condition. If neither approach is appropriate, the licensee must supplement its response to Condition B.1 of this Order to identify the condition as a requirement with which it cannot comply, with attendant justifications as required in Condition B.1.

- C. All licensees shall report to the Commission, in writing, when they have fully implemented the approved revisions to their physical security plans, safeguards contingency plans, and guard training and qualification plans, to protect against the DBT described in Attachment 2 to this Order.
- D. Notwithstanding the provisions of any Commission regulation, license, or order to the contrary, all measures implemented or actions taken in response to this Order shall be maintained until the Commission determines otherwise, except that licensees may make changes to their revised physical security plans and safeguards contingency plans and guard training and qualification plans if authorized by 10 C.F.R. § 50.54(p).

Licensee responses to Conditions A.1, B.1, B.2, and C above, shall be submitted in accordance with 10 C.F.R. § 50.4. In addition, licensee submittals that contain safeguards information shall be properly marked and handled in accordance with 10 C.F.R. § 73.21.

The Director, Office of Nuclear Reactor Regulation, may, in writing, relax or rescind any of the above conditions upon demonstration by the licensee of good cause.

IV.

In accordance with 10 C.F.R. § 2.202, the licensee must, and any other person adversely affected by this Order may, submit an answer to this Order, and may request a hearing on this Order, within **thirty-five (35) days** of the date of this Order. Where good cause is shown, consideration will be given to extending the time to request a hearing. A request for an extension of time in which to submit an answer or request a hearing must be made in writing to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and include a statement of good cause for the extension. The answer may consent to this Order. Unless the answer consents to this Order, the answer shall, in writing and under oath or affirmation, specifically set forth the matters of fact and law on which the licensee or other person adversely affected relies and the reasons as to why the Order should not have been issued. Any answer or request for a hearing shall be submitted to the Secretary, Office of the Secretary of the Commission, U.S. Nuclear Regulatory Commission, ATTN: Rulemakings and Adjudications Staff, Washington, DC 20555-0001. Copies also shall be sent to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; to the Assistant General Counsel for Materials Litigation and Enforcement at the same address; to the Regional Administrator for NRC Region I, II, III, or IV, as appropriate for the specific facility; and to the licensee if the answer or hearing request is by a person other than the licensee. Because of possible disruptions in delivery of mail to United States Government offices, it is requested that answers and requests for hearing be transmitted to the Secretary of the Commission either by means of facsimile transmission to 301-415-1101 or by e-mail to hearingdocket@nrc.gov and also to the Office of the General Counsel either by means of facsimile transmission to 301-415-3725 or by e-mail to OGCMailCenter@nrc.gov. If a person other than the licensee

requests a hearing, that person shall set forth with particularity the manner in which his or her interest is adversely affected by this Order and shall address the criteria set forth in 10 C.F.R. § 2.714(d).

If a hearing is requested by the licensee or a person whose interest is adversely affected, the Commission will issue an Order designating the time and place of any hearing. If a hearing is held, the issue to be considered at such hearing shall be whether this Order should be sustained.

Pursuant to 10 C.F.R. § 2.202(c)(2)(i), the licensee may, in addition to demanding a hearing, at the time the answer is filed or sooner, move the presiding officer to set aside the immediate effectiveness of the Order on the ground that the Order, including the need for immediate effectiveness, is not based on adequate evidence but on mere suspicion, unfounded allegations, or error.

In the absence of any request for hearing, or written approval of an extension of time in which to request a hearing, the provisions specified in Section III above shall be final **thirty-five (35) days** from the date of this Order without further order or proceedings. If an extension of time for requesting a hearing has been approved, the provisions specified in Section III shall be final when the extension expires if a hearing request has not been received. **AN ANSWER OR A REQUEST FOR HEARING SHALL NOT STAY THE IMMEDIATE EFFECTIVENESS OF THIS ORDER.**

FOR THE NUCLEAR REGULATORY COMMISSION

IRA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated this 29th day of April 2003.

REACTOR VESSEL HEAD INSPECTIONS

Presented by

Dr. Allen L. Hiser, Jr.
Materials and Chemical Engineering Branch
Office of Nuclear Reactor Regulation

502nd Meeting of Advisory Committee on Reactor Safeguards

May 8, 2003



OUTLINE

- Background
- Order EA-03-009 (issued February 11, 2003)
 - ▶ Inspection requirements
 - ▶ Flaw evaluation criteria
 - ▶ Relaxation requests
- Recent plant experience
 - ▶ High susceptibility plants
 - ▶ South Texas Project Unit 1
- Outlook & Industry's Role

BACKGROUND

- Fall 2000
 - ▶ Oconee Unit 1 identifies deposits - axial leak

- Spring 2001
 - ▶ Oconee Unit 2 and 3 identify circumferential cracks
 - ▶ ANO Unit 1 identifies a leaking nozzle

- **NRC issues Bulletin 2001-01 - August 2001**
 - ▶ Focus is safety issue (circumferential cracks) for high susceptibility plants
 - ▶ Visual examinations considered acceptable

- Fall 2001
 - ▶ Circumferential cracks identified - Crystal River 3 and Oconee 3
 - ▶ Leaks and repairs at Surry 1, North Anna 2 and TMI

BACKGROUND (cont.)

- Spring 2002
 - ▶ Davis-Besse identifies RPV head wastage & circumferential cracking

- **NRC issues Bulletin 2002-01 - March 2002**
 - ▶ Focus is safety issue is RPV wastage for all plants

- Spring 2002
 - ▶ Millstone identifies part through-wall cracks

- **NRC issues Bulletin 2002-02 - August 2002**
 - ▶ Focus is adequacy of inspection programs - methods (non-visual NDE for high susceptibility) and frequency
 - ▶ Licensee responses generally vague on future program, many cite MRP-75 program

BACKGROUND (cont.)

- Fall 2002
 - ▶ North Anna 2 identifies
 - ✓ Prevalent weld cracking
 - ✓ Leak from a repaired nozzle
 - ✓ Circumferential cracking at weld root without boron deposits
 - ▶ ANO Unit 1 identifies leak from a repaired nozzle
 - ▶ Oconee Unit 2 identifies possible through-wall cracking without boron deposits on the RPV head
 - ▶ Head corrosion at Sequoyah Unit 2 - above head boron source
- **NRC issues Order EA-03-009 - February 2002**
 - ▶ Mandates inspections for all PWRs
- Spring 2003
 - ▶ South Texas Project Unit 1 - boron deposits on the lower head

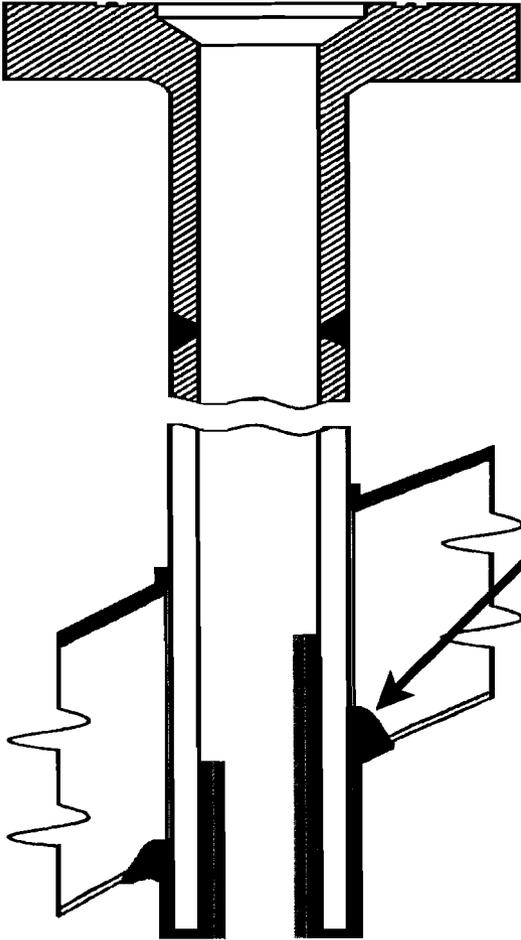
OVERVIEW OF ORDERS

- Issued February 11, 2003
- Issued to all PWRs
- Adequate protection basis
 - ▶ ASME Code inspections are inadequate
 - ▶ Revisions to inspection requirements are not imminent
 - ▶ RPV head degradation and nozzle cracking pose safety risks if not promptly identified and corrected
- Provides a clear regulatory framework pending the incorporation of revised inspection requirements into 10 CFR 50.55a

ORDER REQUIREMENTS

- Evaluate susceptibility - effective degradation years (EDY), based on operating temperature and time
- High plants - bare metal visual AND non-visual NDE at EVERY RFO
- Moderate plants - BMV and non-visual NDE at alternating RFOs
- Low plants - BMV by next 2 RFOs (repeat every 3rd RFO or 5 years), non-visual by 2008 (repeat every 4th RFO or 7 years)
- Non-visual NDE is EITHER:
 - ▶ Ultrasonic with evaluation of interference fit leakage, OR
 - ▶ Wetted-surface examination

Order EA-03-009
Required Inspection Surfaces



Bare Metal Visual
Inspection Area

J-groove Weld

Ultrasonic
Inspection Area

Wetted Surface
Inspection Area

ORDER REQUIREMENTS

- Explicit requirements and criteria to inspect repaired nozzles/welds
- Each RFO, must perform visual inspections to identify boric acid leaks from components above the RPV head - follow-up actions include inspections of potentially-affected RPV head areas and nozzles
- Flaw evaluation per NRC guidance (Strosnider letter fall 2001, revised guidance in Barrett letter April 2003)
- Orders also apply to new RPV heads, either Alloy 600 (Davis-Besse) or Alloy 690 (North Anna 2 and many others)
- Post-outage report 60 days after restart

LICENSEE OPTIONS

- Must respond within 20 days
 - ▶ May request a hearing
 - ▶ May request a time extension to respond

- Request Director of NRR to relax or rescind requirements of the order

- Requests for relaxation for specific VHP nozzles will be evaluated using procedures for proposed alternatives to the ASME Code in accordance with 10 CFR 50.55a(a)(3)
 - ▶ The proposed alternative will provide an acceptable level of quality and safety
 - ▶ Compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety

NEED FOR ORDERS

- Past process of issuing Bulletins unwieldy, inconsistent, not stable, and has no regulatory weight (licensee commitments only)
- Rulemaking would take at least 1 or 2 years
- Orders can be revised or rescinded as necessary
- Although inspection plans for the next RFOs were generally acceptable, NRC wanted to provide licensees with planning time to meet order requirements
- Concerns that above RPV head leakage could result in undetected RPV head degradation

FLAW EVALUATION CRITERIA

November 21, 2001 Letter (ML013250451)	April 11, 2003 Letter (ML030980333)
Same flaw acceptance criteria	
Allows Section XI standards	PWSCC must be evaluated or repaired
Crack growth rate is 95/50 (95th percentile, 50% confidence)	MRP crack growth rate (75/50)
Flaw growth due to SCC	Flaw growth due to SCC & fatigue

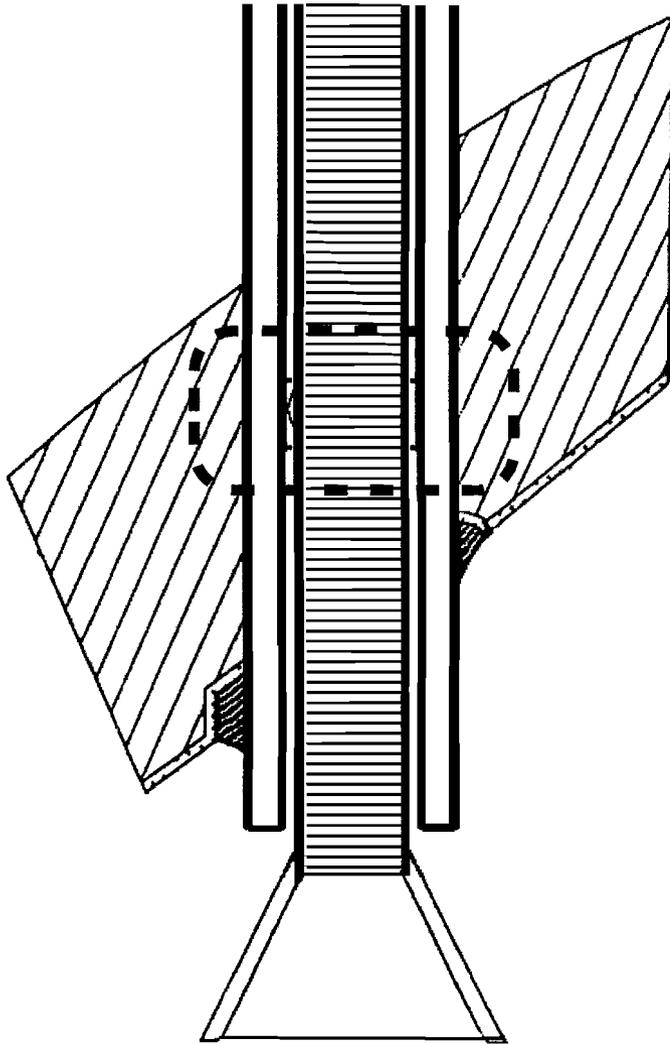
NRC guidance requires repair of circumferential cracks at and above the J-groove weld and outside diameter axial cracks above the weld

- ▶ ASME code action indicates “case-by-case evaluation and approval” by the regulatory authority

RELAXATION REQUESTS

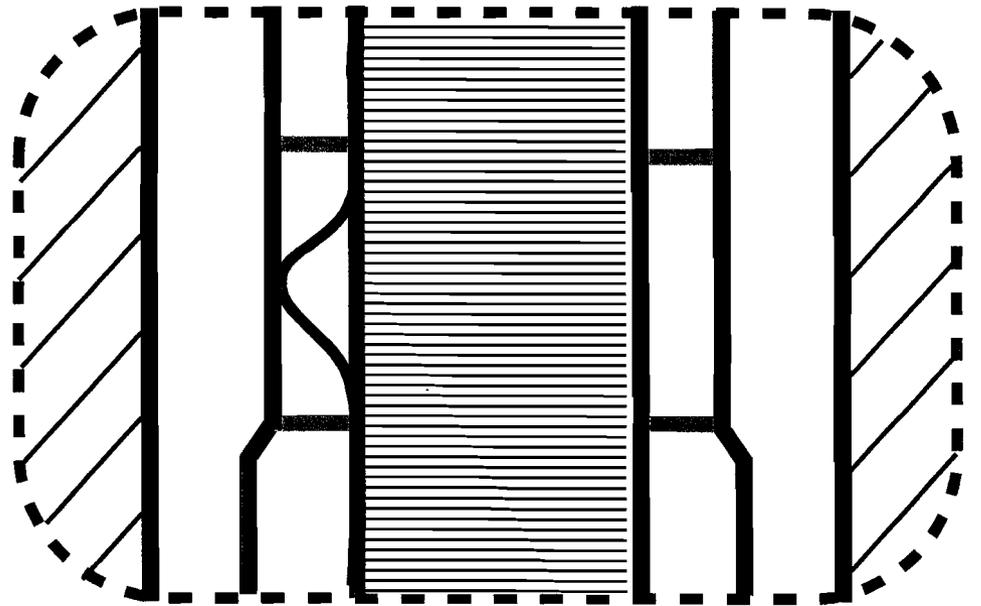
- Limitations above the J-groove weld
 - ▶ Centering tabs & step on nozzle ID
 - ▶ Stress in non-inspected area below 28 ksi
 - ▶ Hardship - would have required guide sleeve removal and re-welding of a guide funnel onto nozzle
- Limitations below the J-groove weld
 - ▶ Guide funnel threads (ID & OD) and tapers on end of nozzles
 - ▶ Transducer coupling for time-of-flight-diffraction
- Bare metal visual examinations
 - ▶ Localized insulation and support shroud interferences
 - ▶ Insulation prevents total access to RPV head surface
 - ✓ UT RPV head thickness measurements

Calvert Cliffs Order Inspection Limitations

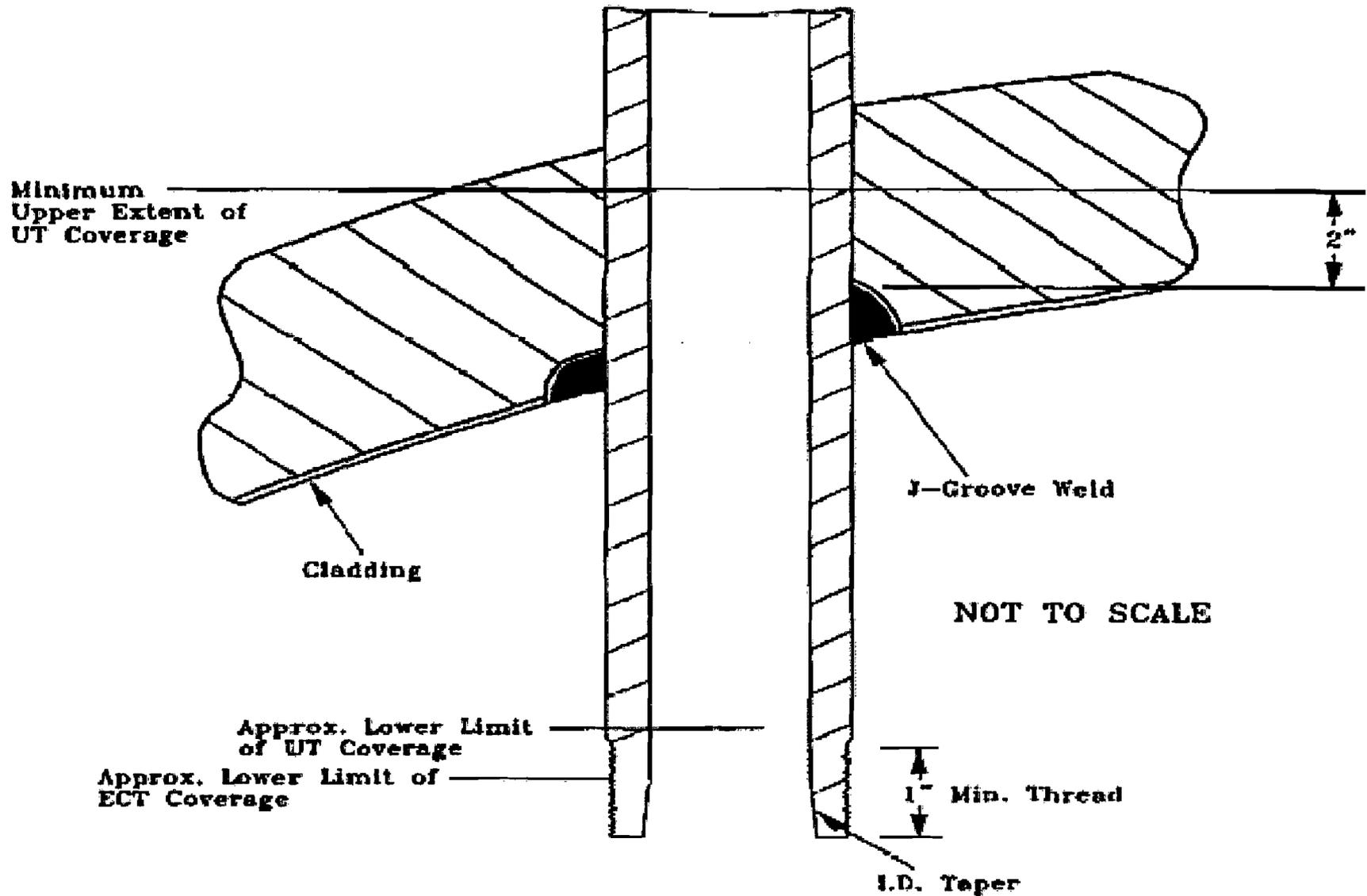


Thermal/Guide Sleeve

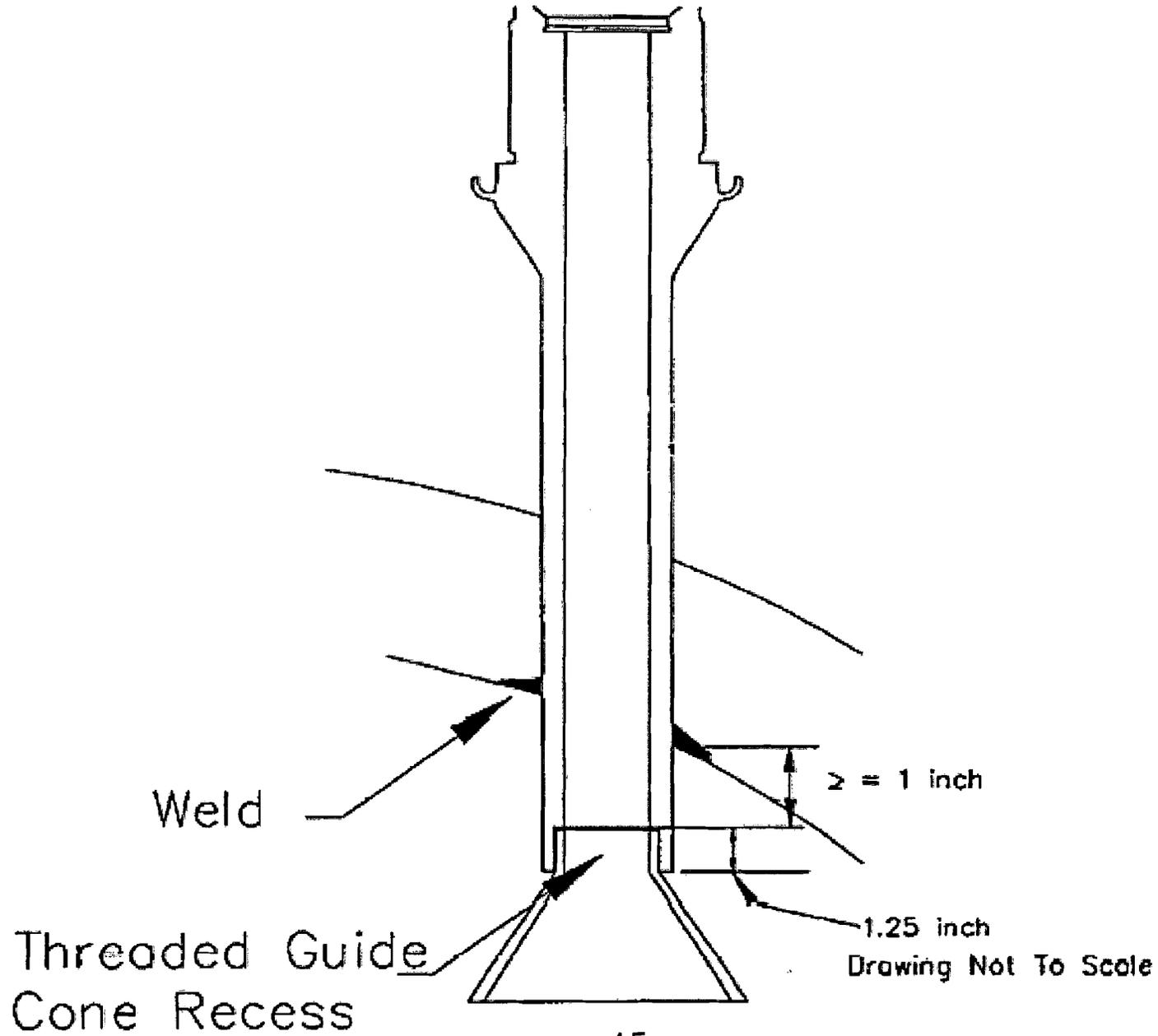
Sleeve Expansion Points



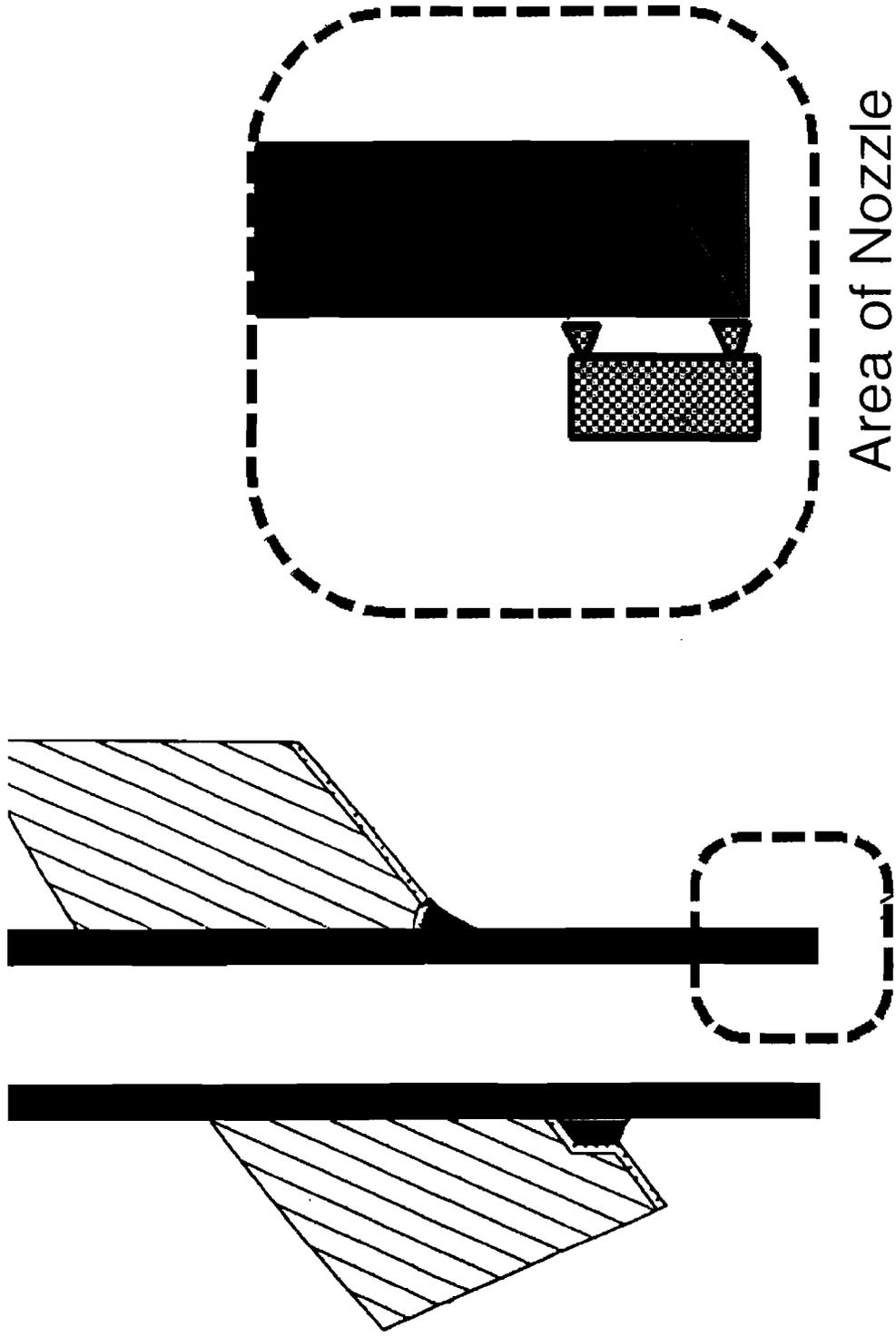
Farley Nuclear Power Plant Cross-section of Typical 4" RPV Nozzle Penetration



St. Lucie Unit 2 Typical RPV Nozzle With Threaded Guide Funnel



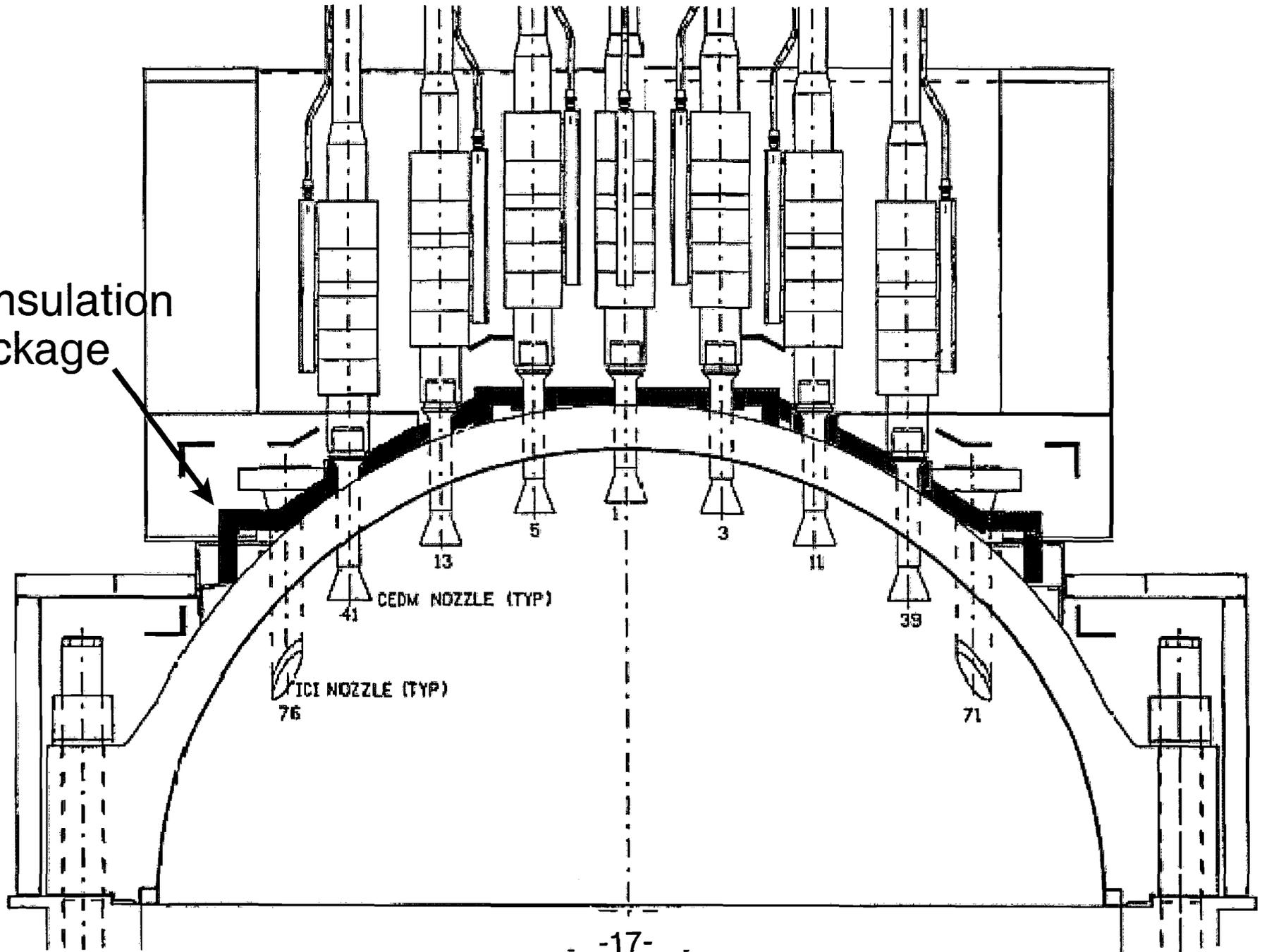
TOFD Transducer Coupling Limitations



Area of Nozzle
Inspection Limitation

Millstone Power Station Bare Metal Visual Inspection Restraints

Head Insulation
Package



POST-ORDER INSPECTION FINDINGS

Plant	EDY	Number of Nozzles With		Comments
		Leaks	Cracks	
Oconee 3	22.5	2	(2)*	Head replaced
North Anna 1	21.4	(1)**	(1)*	Head replaced
Surry 1	20.5			Head to be replaced
Turkey Point 3	18.3	0	0	
Farley 1	17.5	0	0	
Calvert Cliffs 2	15.2	0	0	
Cook 2	14.6			Not complete
St. Lucie 2	14.0	0	2	
Beaver Valley 1	14.0	0	4	

* No non-visual NDE - bare metal visual examination only.

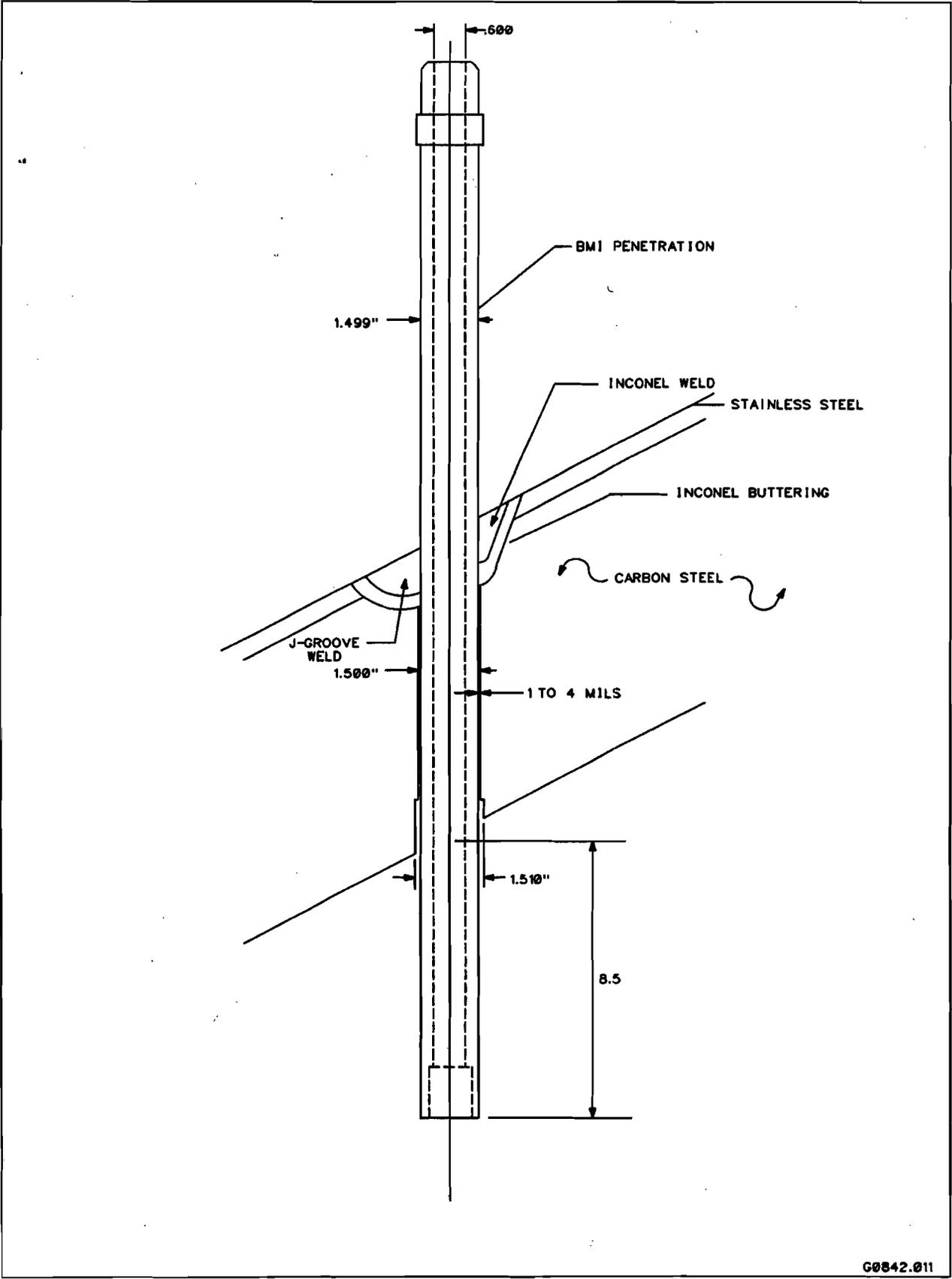
** Limited bare metal visual examination.

SOUTH TEXAS PROJECT UNIT 1 - SPRING 2003

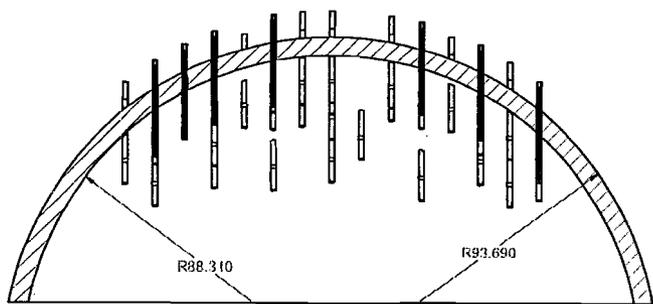
- Lower head examination identifies 2 nozzles with deposits - #1 (“gummy”) and #46 (“hard”) - upper head is clean
- No deposit fall 2002 - half-aspirin and smaller spring 2003
- EDY of upper head is 4.5-6.3 (recent bypass flow conversion)
- EDY of lower head ~2.1 (operating temperature 561 °F)
- Licensee planning characterization activities, including flaw identification (nozzle base material or J-groove weld?), root cause (fabrication-related, fatigue or PWSCC?) and repair



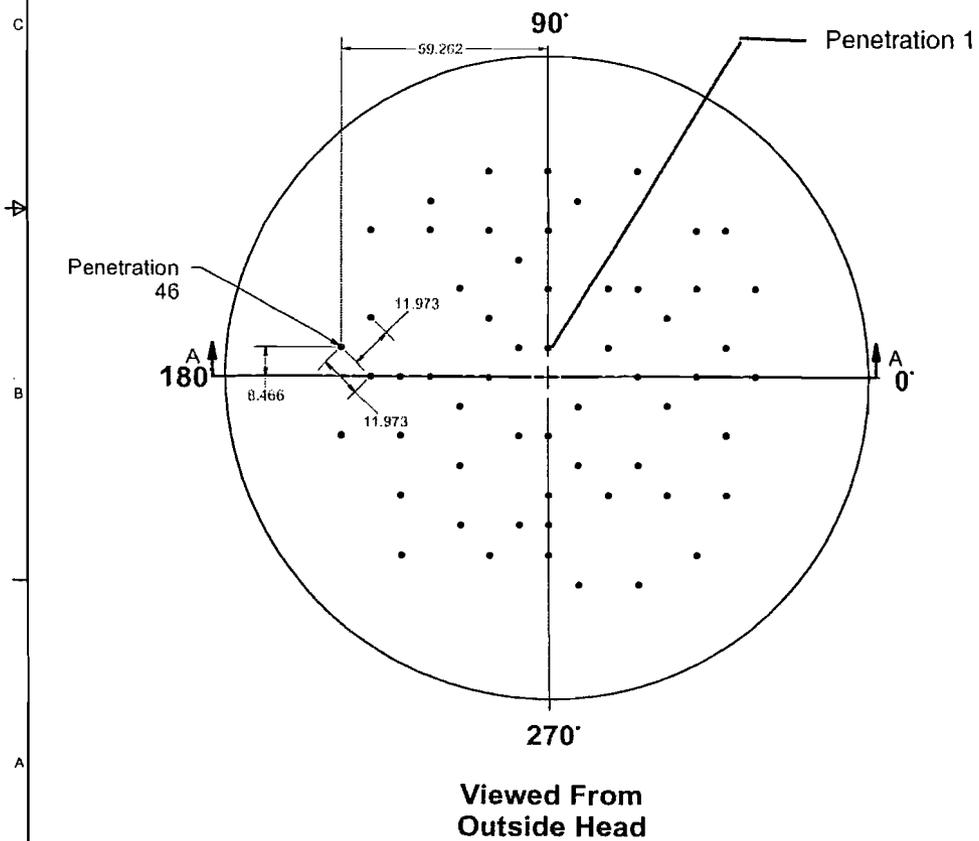
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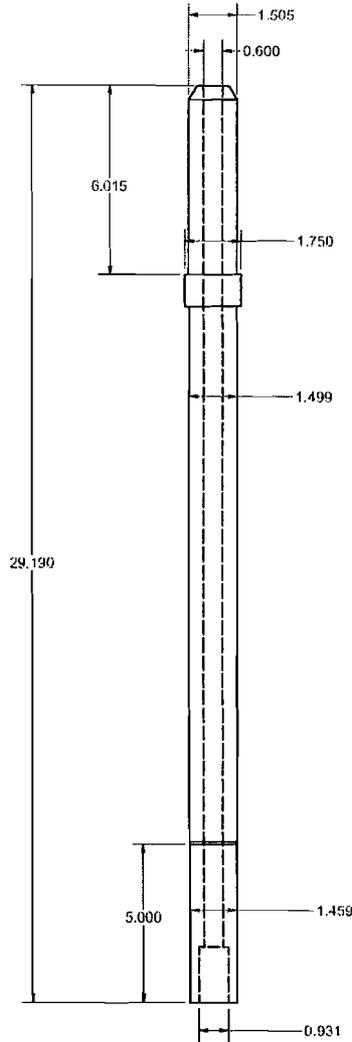
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SECTION A-A
SCALE 1 / 25



Viewed From
Outside Head



Penetration 46
BMI Tube
Mtl. = SB-166

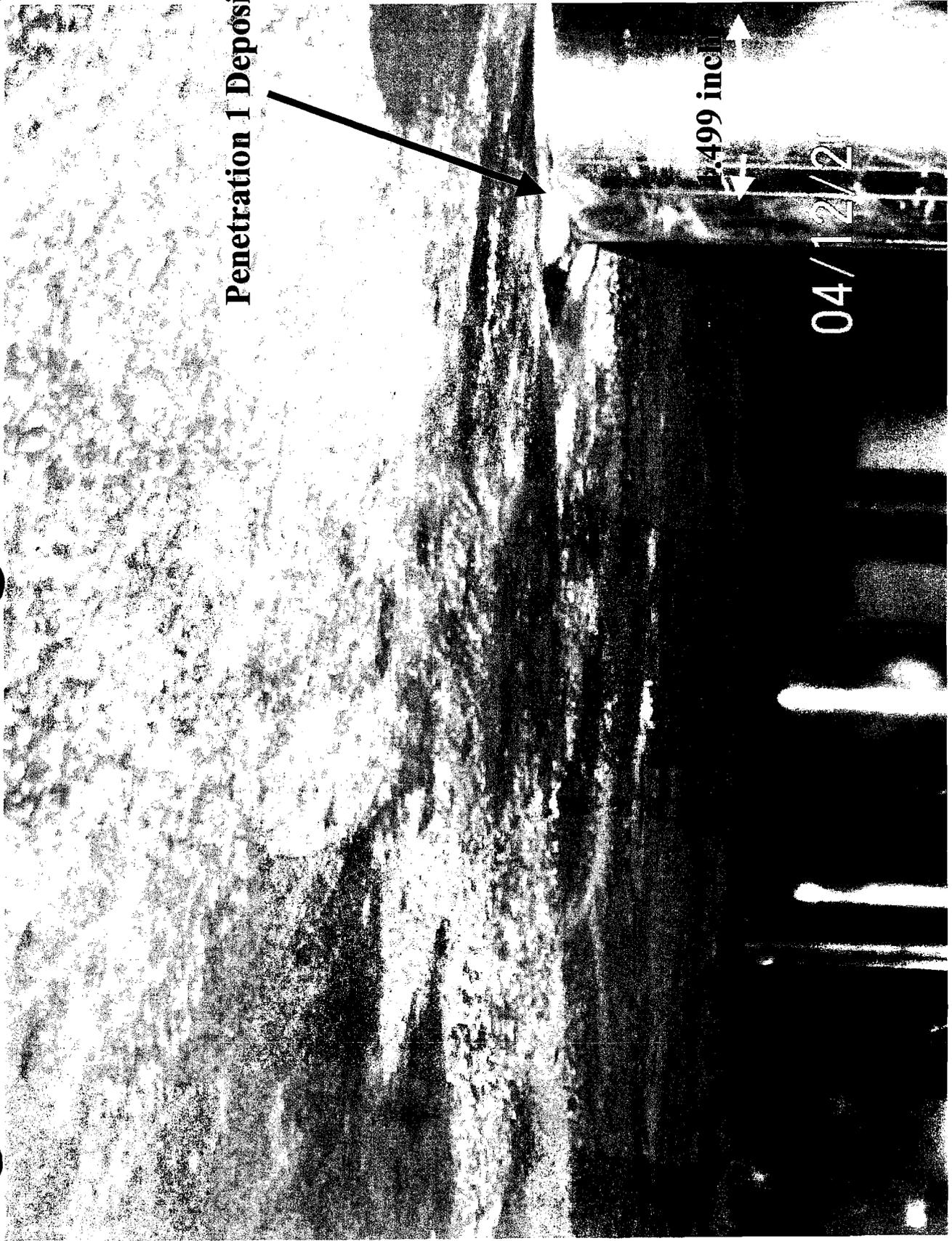


Penetration 1 Deposit

4.9 in

04/12/2003

Penetration 1



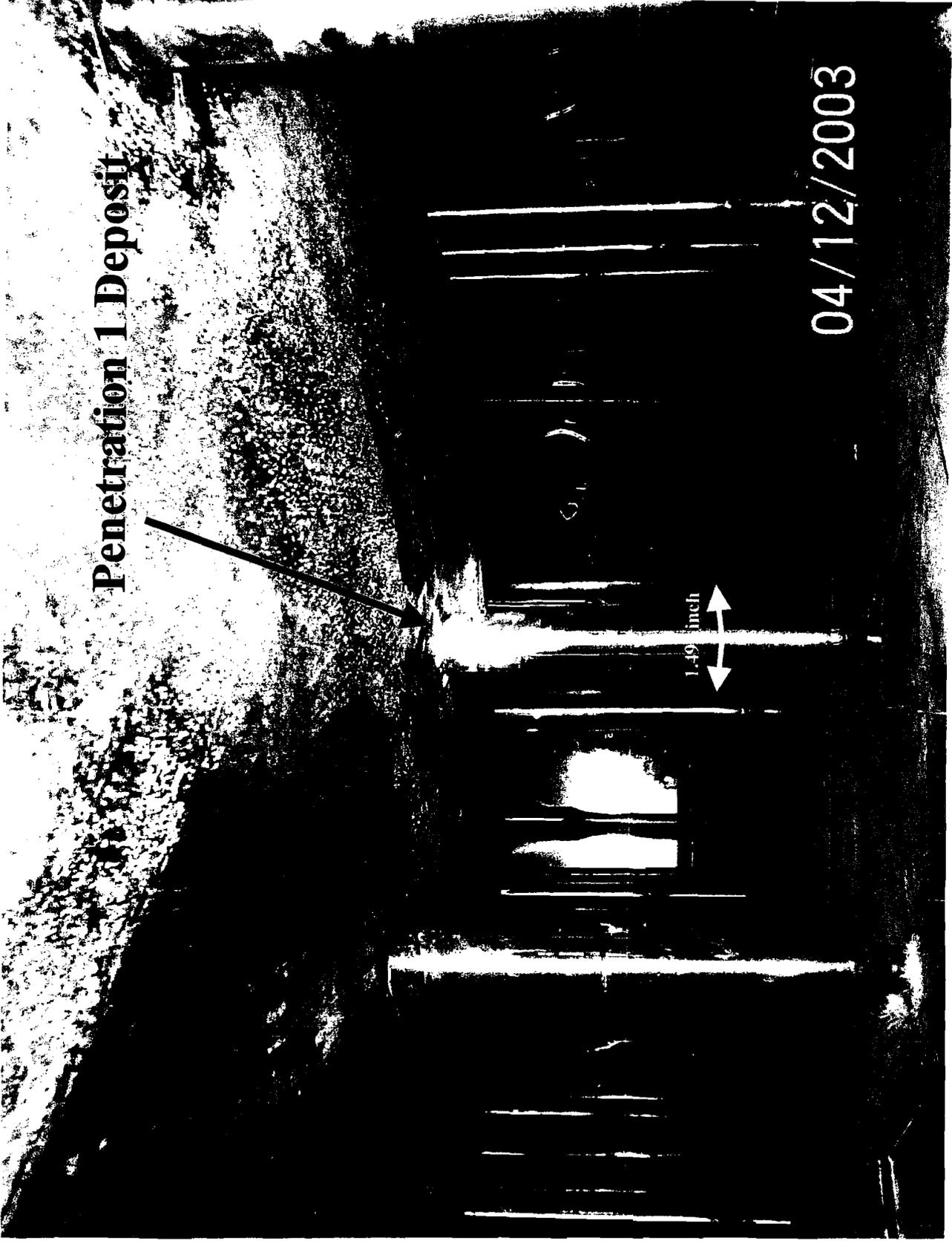
Penetration 1 Deposit

0.499 inch

04/12/21

Penetration 1

4



Penetration 1 Deposit

04/12/2003

1.49 inch

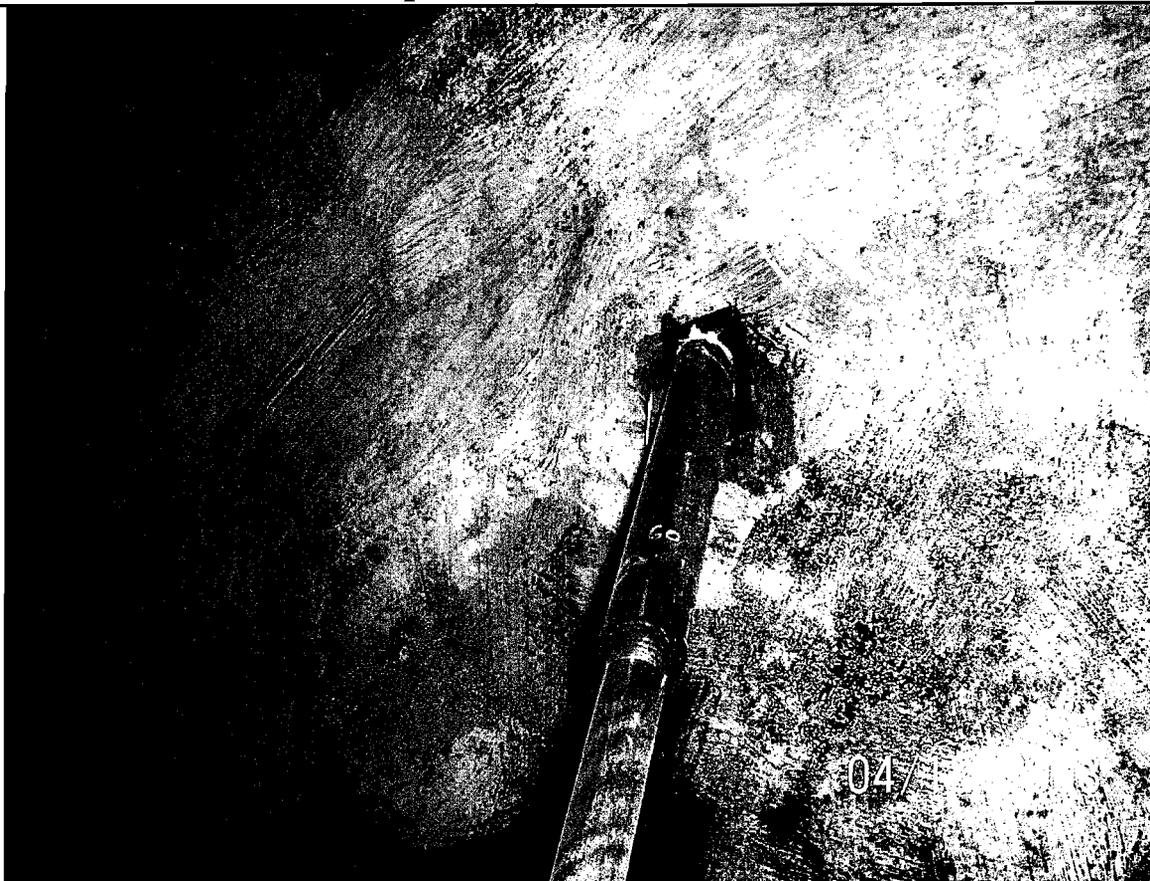
Penetration 1

6

-2

39

Unit 1 BMI Penetration 46
Initial Inspection – Attachment to 03-6248



**Unit 1 BMI Penetration 46
Initial Inspection – Closeups**



OUTLOOK

- Goal is “permanent” requirements for inspections to ensure structural integrity of the RPV head and VHP nozzles
- ASME Code is working to develop inspection requirements
 - ▶ Has been based upon industry report (MRP-75)
 - ▶ NRC staff has provided comments - report is not acceptable as submitted, acceptability is not certain
 - ▶ NRC has suspended review pending revisions by the industry based on fall 2002 findings
 - ▶ ASME Code adoption of requirements may not be complete until 2004 or later
- Inspection requirements will be implemented in 10 CFR 50.55a
 - ▶ Endorse the new ASME Code requirements (if acceptable) under expedited implementation, OR
 - ▶ Codify alternative inspection requirements
 - ▶ Will take 1-2 years once acceptable requirements are identified

INDUSTRY'S ROLE

- Complete development of and submit revised MRP-75 in a timely manner
- Continue/renew staff level interactions with NRC on the underlying analyses to support MRP-75
- Continue development of improved inspection tools to provide more effective examinations
- Continue activities to characterize RPV heads removed from service (e.g., North Anna Unit 2, Oconee Unit 2, etc.)
- Continue boric acid corrosion research to determine the conditions that can lead to accelerated corrosion rates
- Begin consideration of other RCS areas susceptible to cracking (e.g., hot leg piping, etc.)



PLANS FOR ADDRESSING THE DAVIS-BESSE LESSONS LEARNED TASK FORCE RECOMMENDATIONS

**Brendan Moroney, NRR
Douglas Kalinouski, RES
May 8, 2003**

INTRODUCTION

- **NRR and RES jointly developed an overall implementing plan**
- **Delivered to EDO on 2/28/03**
- **Forwarded to Commission on 3/10/03**

HIGH PRIORITY ITEMS

- **Overall Plan includes 4 Action Plans for High Priority items (21 items) in Davis-Besse LLTF Review Team memo**

ACTION PLANS

- **Stress Corrosion Cracking**

Lead: NRR/DLPM

- **Operating Experience**

Lead: NRR/DRIP

- **Inspection, Assessment, and
Project Management**

Lead: NRR/DIPM

- **Barrier Integrity**

Lead: RES/DET

STRESS CORROSION CRACKING ACTION PLAN

**Part I RPV Head Inspection
Requirements**

**Part II Boric Acid Corrosion Control
Requirements**

**Part III Inspection Program
Improvements**

STRESS CORROSION CRACKING ACTION PLAN

Part I - Inspection Requirements

- 1. Collect world-wide information - 03/04**
- 2. Evaluate existing SCC models for use in susceptibility index - 05/03**
- 3. Evaluate results of inspections per Bulletins and Orders - 05/04**
- 4. Review and evaluate MRP and ASME efforts -TBD**
- 5. Endorse ASME Code changes or develop alternative inspection requirements - 12/04**

STRESS CORROSION CRACKING ACTION PLAN

Part II - Boric Acid Corrosion Control

- 1. Collect world-wide information - 10/04**
- 2. Evaluate Bulletin 2002-01 responses - 04/03**
- 3. Evaluate the need for additional regulatory actions - 05/03**
- 4. Review and evaluate ASME Code revised requirements - 01/05**

STRESS CORROSION CRACKING ACTION PLAN

Part III - Inspection Programs

- 1. Guidance for periodic review of licensee ISI activities by NRC - 03/04**
- 2. Guidance for timely, periodic inspections of plant BACC programs - 03/04**
- 3. Guidance for assessing adequacy of plant BACC programs - 03/04**



BARRIER INTEGRITY ACTION PLAN

**Part I Leakage Detection and
Monitoring Requirements**

**Part II Improved Performance
Indicators**

BARRIER INTEGRITY ACTION PLAN

Part I - Leakage

1. Develop basis for new RCS leakage requirements

- **Review bases for current leakage limit**
- **Review experience/capabilities of currently used leak detection systems**
- **Evaluate capabilities of state-of-the-art leak detection systems**
 - * **Scope of Action Plan increased to include methods which may be capable of detecting degradation before leakage**
- **Evaluate leak rates that lead to degradation**

BARRIER INTEGRITY ACTION PLAN

Part I - Leakage (Continued)

2. Develop recommendations for improved leakage requirements

- **TS**
- **Inspection Guidance**
- **RG 1.45**

3. Incorporate recommendations, as appropriate, into requirements

4. Examine improvements to barrier integrity requirements in addition to those which rely on leakage monitoring

BARRIER INTEGRITY ACTION PLAN

Part 2 - Performance Indicators

- **Implement improved PI based on current requirements and capabilities**
- **Develop and implement an advanced PI**
- **Re-evaluate PI based on changes to RCS leakage requirements**



United States Nuclear Regulatory Commission

RES/DET/MEB Programs and Activities to Address:

- 1. Nickel-Base Alloy Cracking**
- 2. Boric Acid Corrosion of Pressure Boundary Materials**
- 3. Safety Assessment of Exposed Cladding in Davis-Besse Cavity**

**502nd ACRS Full Committee Meeting on
Vessel Head Penetration Cracking and RPV Head Degradation
May 8, 2003**

**William H. Cullen, Jr.
301-415-6754
whc@nrc.gov**



United States Nuclear Regulatory Commission

RES/DET/MEB Programs and Activities to Address: CRDM Cracking Issues

- A. NRC-Funded SCC Program & Products**
 - 1. On-going EAC and Boric Acid Corrosion Programs**
 - 2. LLTF Rec. to Review Worldwide Experience with Alloy 600 CRDMs, Boric Acid Corrosion**
- B. Additional Programs with Expected, Relevant Products**
 - 1. Japanese Coordinated Program**
 - 2. ICG-EAC Round Robin**
 - 3. Other Programs**
- C. Heat-by-Heat Analysis of Domestic Plant CRDMs**
- D. Stress Analysis of CRDM Penetrations**
- E. Davis-Besse Cavity Exam Update – What it Means To NRC/RES**
 - 1. Structural Integrity Assessment of Exposed Clad for ASP**



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NRC's SCC Programs & Products

A. On-going EAC Program at Argonne Nat. Lab.

- 1. SCC Testing of Alloys 600, 182, 690 and 152 in BWR and PWR water**
 - a. Also evaluating strength, metallography for insight into mechanisms**
- 2. Been testing since 1997, NUREG/CR-6717**
 - a. Letter report on SCC in 182 due 10/04, NUREG due 12/05**

B. Testing of Davis-Besse Materials (part of BAC program at ANL)

- 1. Alloy 600 from Nozzle #3 (M3935), and Alloy 182 from #11 J-weld**

C. LLTF Rec. to Review Int'l Experience with Alloy 600 CRDMs

- 1. Critique of susceptibility model [$EDY = EFPY * (\text{temp. factor})$] – Done 2/28/03**
- 2. Report on worldwide Alloy 600 cracking experience (Dec. '03)**
- 3. Report on worldwide boric acid corrosion experience (Oct. '04)**



United States Nuclear Regulatory Commission

Additional Programs

Products (CGR Data, Mechanistics) Will Contribute to Existing Databases

1. Japanese Coordinated Program

a. Electric Joint Research Project

- SCC and SSRT on Alloys MA600, Alloy 132, 82, TT690, Alloys 152 & 52

b. National Nickel-Based Alloy Material Project

- SCC on Alloys MA600, Alloy 132, 82, TT690, Alloys 152 & 52

2. ICG-EAC Round Robin

a. Purpose: resolve factors that cause differences in stress corrosion crack growth rate response, esp. in Alloy 182 weld

b. Status: Specimens distributed, some tests completed, reports next month

c. Expectations:

- Phase 1 – Collect info – Completed
- Phase 2 – Test 30% CW A600 in '03, Compare results, Improve methods
- Phase 3 – Test Alloy 182

3. Other Programs

a. Tests underway in France, Spain and Sweden

4. Dialogue to Obtain Mockups from Replacement Head Fabrication, and pieces from discarded heads (North Anna 2, Oconee 3)



United States Nuclear Regulatory Commission

Plant-specific (heat-specific) cross-correlations starting from Davis-Besse

Heat Identification	Other Plants With Heads Containing Same Heat of Material
M3935 (3 of 5 cracked)	Oconee 3 (replace in '03), Ark. Nuclear One 1 (replace in '05)
C2649-1	Oconee 1 (replace in '03), Oconee 2 (replace in '04) Oconee 3, ANO 1
M4437	Not found in any other plant's CRDMs

So, specifics about nozzle heats from D-B are not applicable in the long-term for other licensees. However



United States Nuclear Regulatory Commission

Plant-specific (heat-specific) cross-correlations starting from North Anna 2

Heat Identification	Other Plants With Heads Containing Same Heat of Material
755534, 755535, 755536, 755537, 755538, 570892, 568011, 710209	North Anna 1, Sequoyah 1
710147	North Anna 1, Sequoyah 2
71207, 71208, 710210	North Anna 1, Sequoyah 1, Sequoyah 2
71206	North Anna 1, Surry 2, Sequoyah 1, Sequoyah 2
772024	Watts Bar-1, Watts Bar-2, Catawba-1, McGuire-2



United States Nuclear Regulatory Commission

March '03 Conference on CRDM and related Issues

(Including safe ends, ICI penetrations, coolant loop repairs, etc.)

■ Five main session topics

- Structural Analysis and Fracture Mechanics Issues (4 papers)
- Inspection technologies, disposition & sizing of flaws, new developments (9 papers)
- Crack growth rates for relevant nickel-base alloys & welds (8 papers)
- Mitigation & Foreign Experience (9 papers)
- Continued Plant Operation (8 papers)

■ March 20-26 At Gaithersburg-Marriott

■ Expected 40 or more attendees (11 countries) & participants

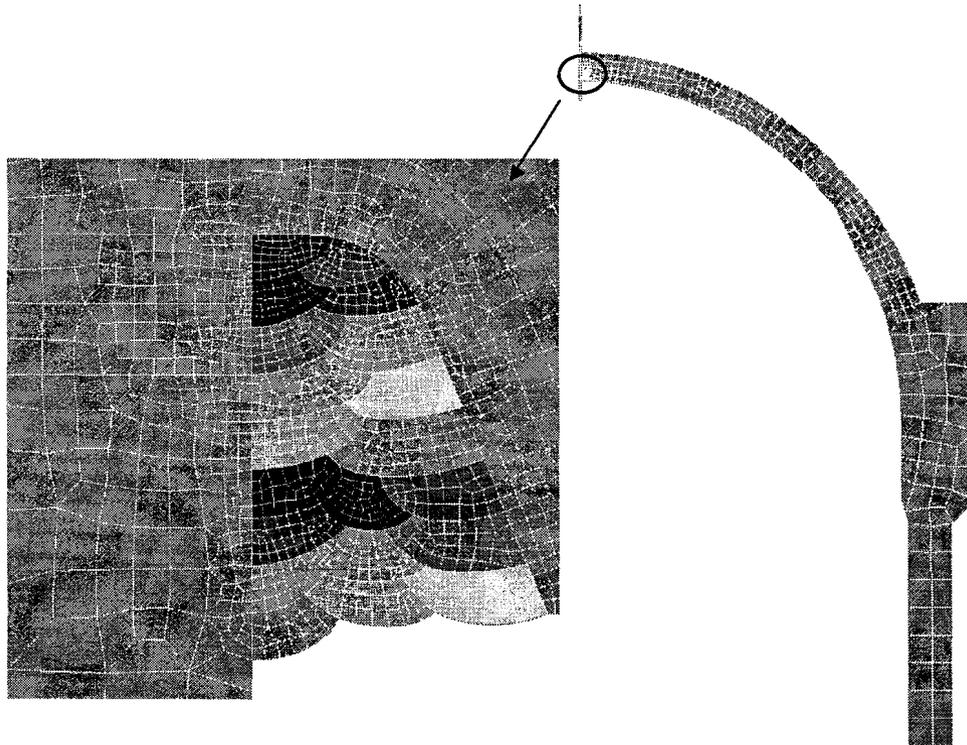
■ Proceedings issued as CD and NUREG/CP

■ To Be Rescheduled For Early Fall '03 When Travel Restrictions Are Lifted



United States Nuclear Regulatory Commission

Stress Analysis of CRDM Penetrations



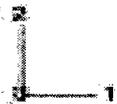
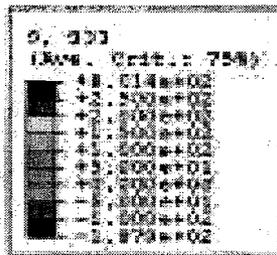
Pass-by-pass simulation of the weld, followed by calculation of the stress, proceed to the next pass, etc.

Calculate axial, radial & tangential, resolve to principal stress.



United States Nuclear Regulatory Commission

Hoop stresses at NOP/NOT



CAEPI Stress Contour Legend: Legend run with CAEPI data of Alloy 1821
Std: CAEPI Standard 2.3-1 Fri May 17 19:36:21 Eastern Daylight Time 2002

CAEPI STRESS: Operation at 2000 psi and 2600 psi (17.237 MPa)
Increment: 20 Hoop Stress: 1.000
Primary Var: 0. 233
Deformed Visc: 0 Deformation Scale Factor: +1.000e+00

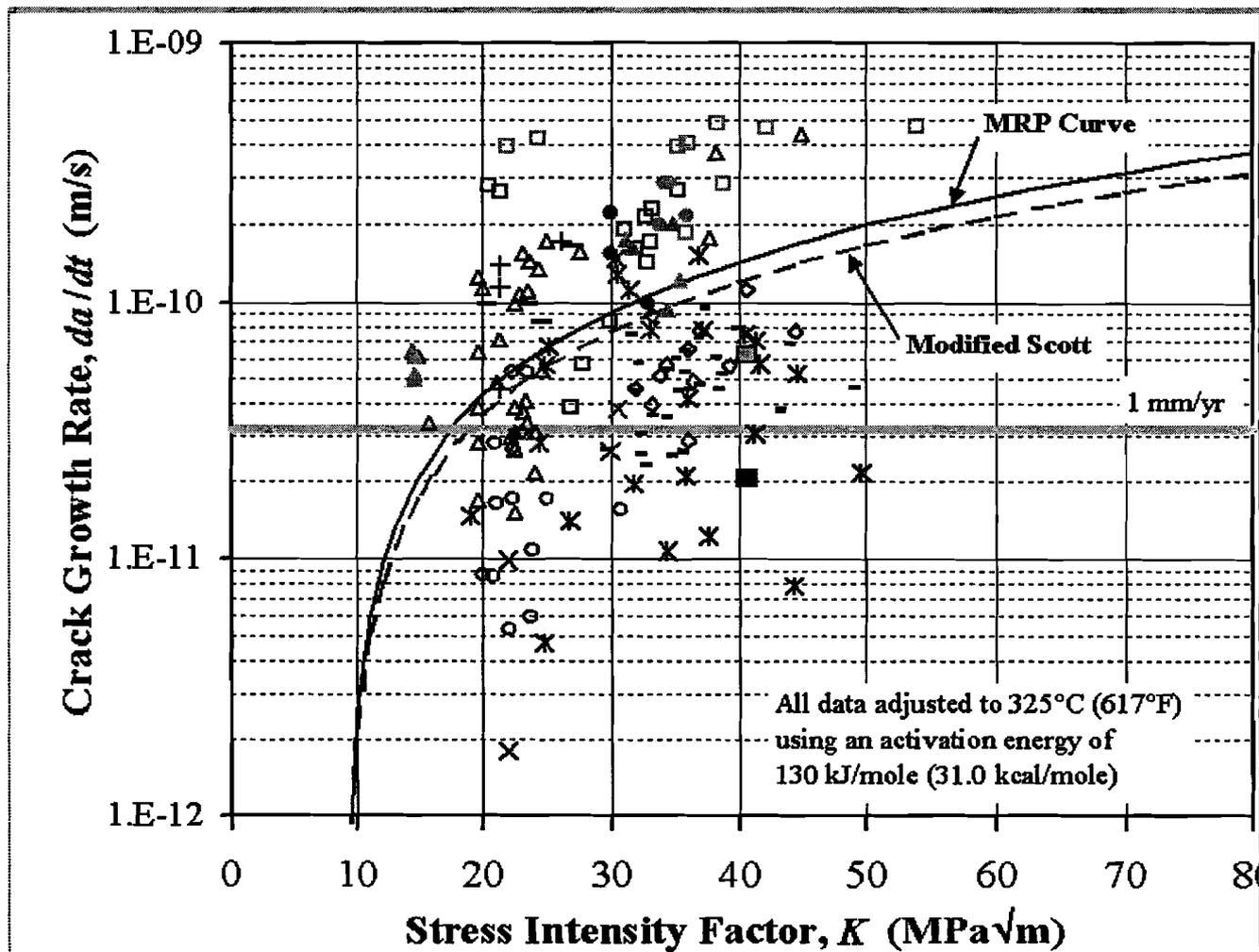


United States Nuclear Regulatory Commission

Stress-corrosion crack growth rate data from MRP-55; validated by ITG on CGRs in Alloy 600.

Much more data to be added in next couple of years, mostly through international programs.

ITG now working on Alloy 182 compilation – meeting next week.





United States Nuclear Regulatory Commission

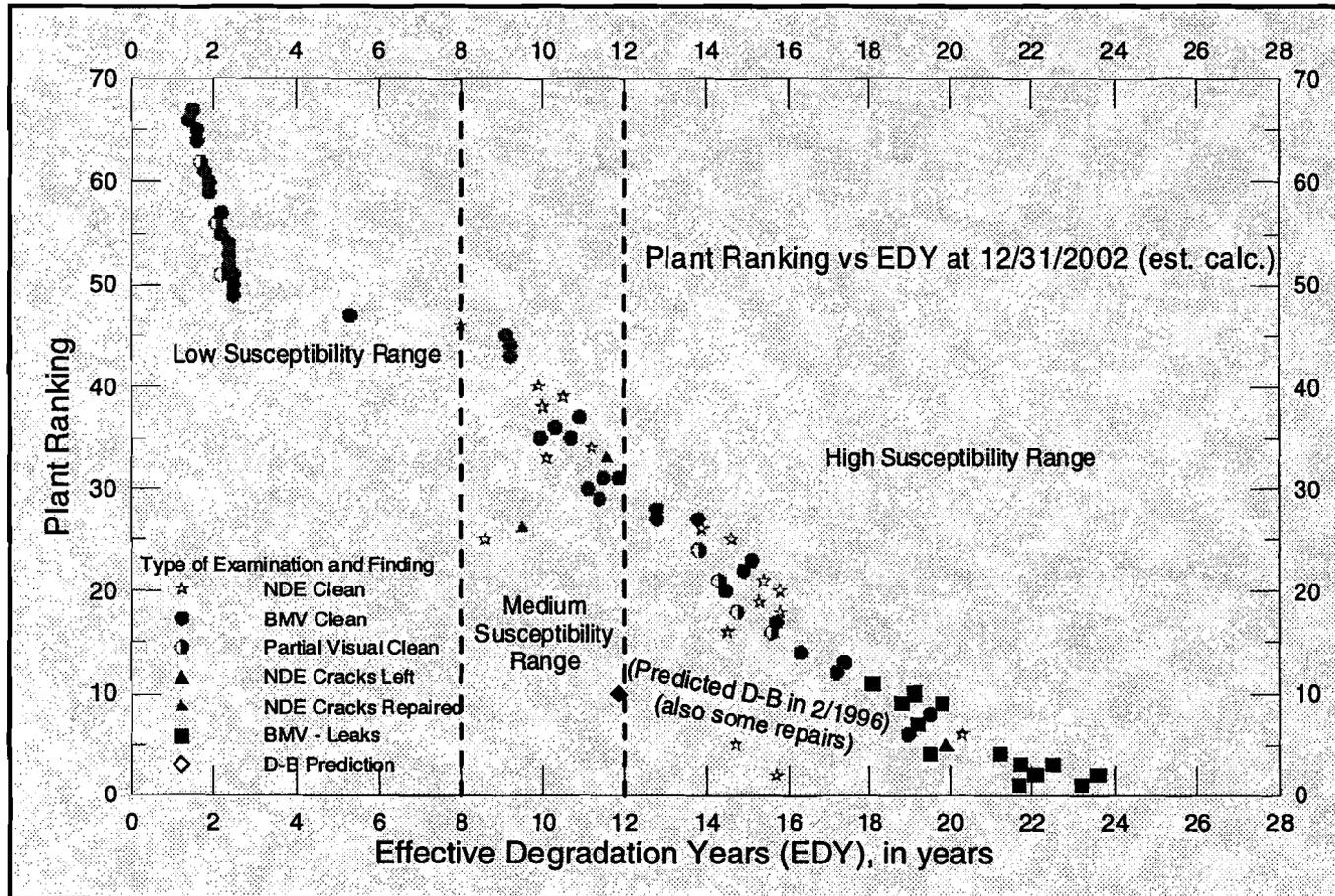
NRC Research Programs Related to CRDM & Alloy 600 **The longer term response**

- Continued development of CRDM & closure weld inspection techniques
 - Modeling of Residual Stresses (tube fabrication & closure weld induced)
 - Improved Probabilistic Model for t_f of Circ. Cracks
 - Continue Testing SCC Rates of A600, A690 & Welds
 - Supplemented D-B materials (A600, A182) into on-going program
 - Development of an International Cooperative Group on PWSCC of Nickel-base Alloys, Including Inspection and Repair Techniques
 - Workshop on March 24-26 to Discuss Issues of PWSCC in Nickel-Base Alloys
(To be rescheduled for early Fall '03)
- All feed into improved risk analysis models**



United States Nuclear Regulatory Commission

Plant Ranking vs. EDY



Current model depends only on time at temperature.

Accuracy of temp.?

Model parameters based on Alloy 600 activation energy for crack nucleation:

- 1. not crack growth*
- 2. Alloy 182/82*

Other factors might be quantified well enough to warrant consideration:

Yield strength/stress

GB carbides

Measured da/dt



United States Nuclear Regulatory Commission

Completion of Cavity and Exposed Clad Exams

- **Completion due early May, 2003 – docketed shortly after**
 - **Axial & circumferential cracks in J-weld sectioned, opened**
 - **Long axial cracks, very short circumferential cracks – both IGSCC**
 - **Cracks in clad were measured, opened, characterized, deposits analyzed**
 - **Depth is ~1 – 1.5 mm; all terminate with ~5.0 mm clad remaining**
 - **Possibly due to stress effect, less possibly a temperature effect**
 - **Temp gradient in clad was 315°C (RCS side) - ~100°C – cavity side**
 - **All growth by IGSCC in conc. boric acid solution, no ductile tearing**
 - **Elicitation of the growth rate would shed light on cavity evolution**
 - **Walls of the cavity examined for corrosion morphology effects**



United States Nuclear Regulatory Commission

Exam of exposed clad & J-weld – sectioning scheme

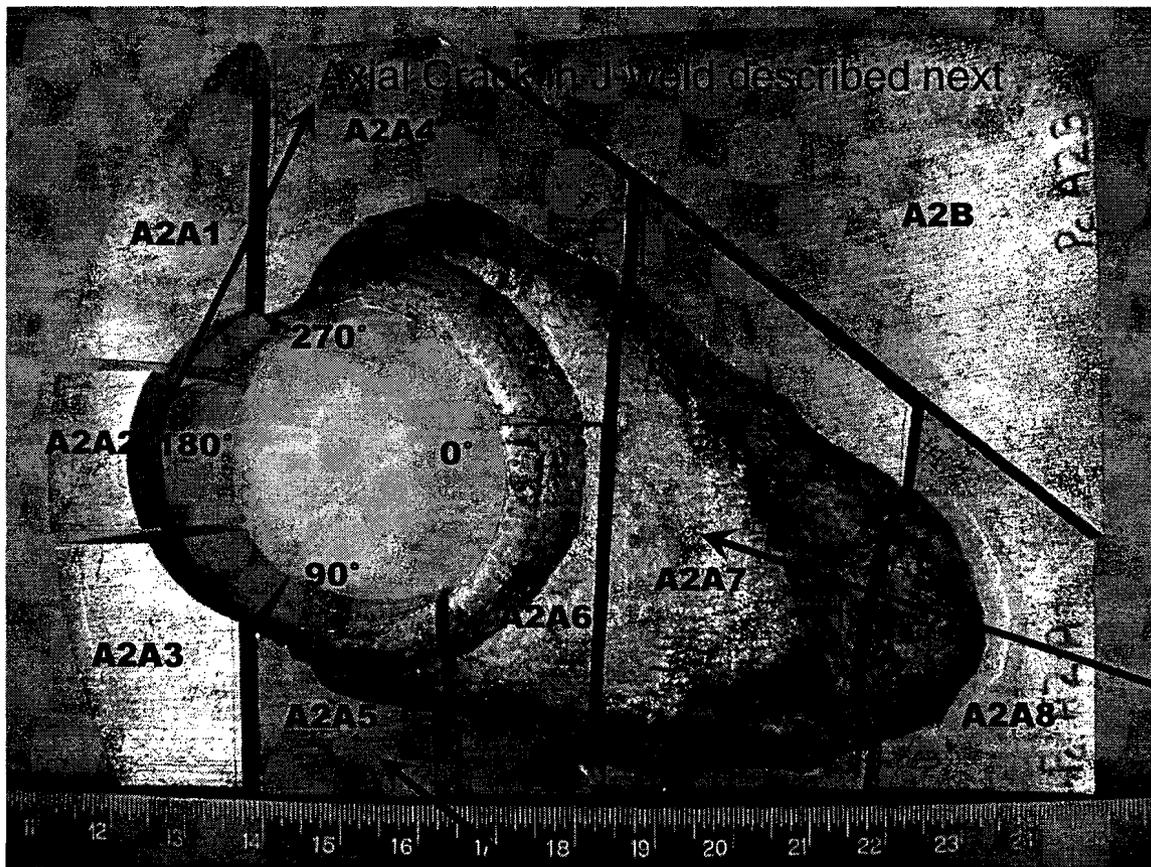


Photo shows major cuts made in preparation for cavity exam. Most sections were further reduced for metallographic and fractographic exams. Largest cracks were near $\sim 10^\circ$ (major leak) and 180° (non-leaking).

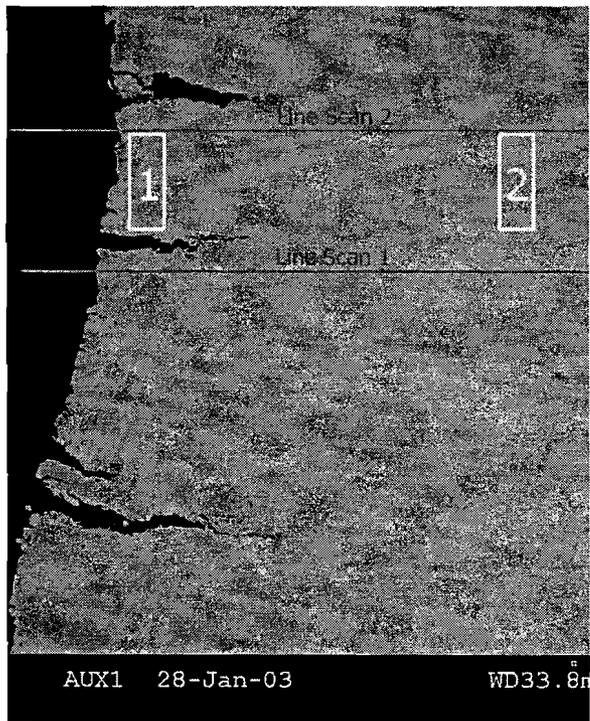
Cracks in clad described later

Piece A2A5 shown on subsequent slide

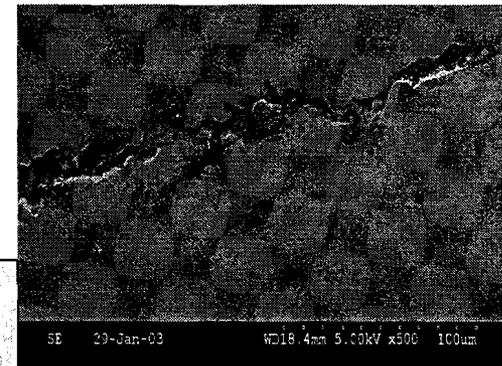
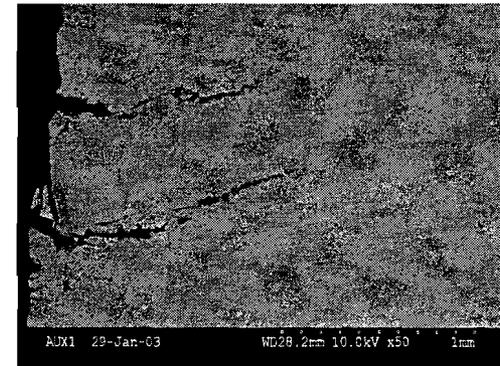


United States Nuclear Regulatory Commission

Opened crack in cladding shows interdendritic growth morphology – all IGSCC, no tearing, even near the bulge.



SEM (top) shows interdendritic crack path



SEM (right) shows preferential dissolution of ferrite creates crack path



United States Nuclear Regulatory Commission

Davis-Besse Root Cause and Safety Assessment

1. **Features of Boric Acid Corrosion Program at Argonne Nat. Lab**
 - A. **Crack Growth Rates of Alloys 600 & 182 from Davis-Besse Head**
 - B. **Computational Model, Based on Probabilistic Assessment of:**
 - i. **Statistics of Crack Initiation**
 - ii. **Probability of Detection & Accuracy of Sizing**
 - iii. **Crack Growth Rate Variations**
 - iv. **Stress Intensity Factor Gradients (Residual Stress, Interferences)**
 - v. **Critical Crack Sizes, Including Factor of Safety**
 - C. **Electrochemical Potential and Polarization Measurements of Low-Alloy Steel, Alloys 600 & 182 in Concentrated Boric Acid Solutions**
 - i. **Measure E_{cp} for range of solution compositions, temperatures**
 - ii. **Include molten boric acid species at temp. & pressure**
2. **Next two slides describe MEB Program on Structural Integrity at ORNL**



United States Nuclear Regulatory Commission

Structural Integrity Assessment

■ Approach

- Created detailed finite element model of the DB head, wastage cavity, and remaining unbacked cladding.
- Developed two failure models to bound expected behavior:
 1. Plastic instability model calibrated by PVRC-sponsored unflawed rupture disk results.
 2. Ductile tearing initiation model using 3-wire, 308SS quasistatic fracture toughness properties.
- Predicted best-estimate failure probability vs pressure as a function of crack depth.
- Conducted Monte Carlo analysis to determine failure probabilities with respect to the best estimate.

■ Variable Modeling Categories

- **Probabilistic:** Crack depth, material toughness, rupture disk failure pressure.
- **Conservative Deterministic:** J-groove weld reinforcement; cladding thickness.
- **Best-Estimate Deterministic:** Cladding cavity area; low alloy steel, Alloy 600, and 308 SS constitutive behavior; vessel head geometry; operating temperature and pressure.



United States Nuclear Regulatory Commission

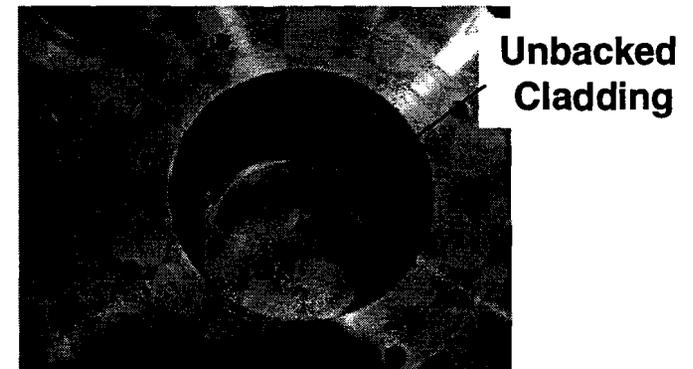
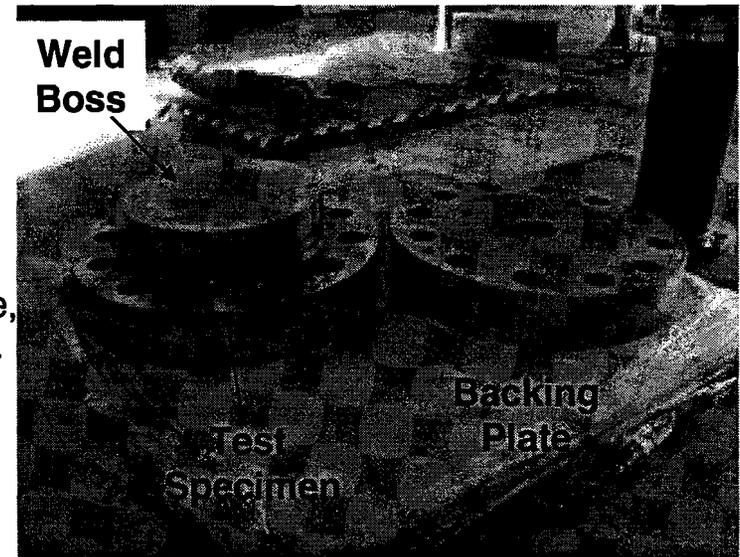
Ongoing Work for ASP Analysis (by 10/03)

■ Analytical Program

- Develop tearing instability model to analyze intermediate-depth flaws.
- Extend model to predict failure probabilities for the year preceding cavity discovery.
 - Monte Carlo Analysis
 - Probabilistic Variables: Pressure, cavity size, flaw size, wastage rate, material toughness, and burst pressure.
- More rigorous quantification of geometric, material, and failure model uncertainties.

■ Experimental Program

- Conduct material property testing of surrogate cladding material (PVRUF).
- Perform burst tests on simple, circular or elliptical cavity geometries.
 - Unflawed specimens
 - Flawed specimens
- Assess accuracy of analytical failure models.





BACKGROUND/HISTORY OF
RISK-INFORMED INSERVICE
INSPECTION ACTIVITIES

May 8, 2003

SYED ALI RES/DET/ERAB
STEPHEN DINSMORE NRR/DSSA/SPSB
ANDREA KEIM NRR/DE/EMCB

BACKGROUND

- **In 1996, the PRA Implementation Plan established plans for the development of a General RG and SRP and four application specific RGs and SRPs:**

Technical Specifications

ISI

IST

Graded QA

- **U.S. plants are designed and constructed to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code.**
- **The Code inservice inspection requirements did not consider risk insights. Inspection resources should be focused in those areas which are most safety and risk significant.**

OBJECTIVE

- **Objectives of ISI Program is to identify degraded conditions that are precursors to pipe failures.**
- **Regulatory requirements for ISI are specified in 10 CFR 50.55a(g).**
- **10 CFR 50.55a(g) references ASME Code Section XI for ISI requirements.**
- **10 CFR 50.55a(a)(3)(i) provides for authorization of alternative ISI programs by Director of NRR.**
- **Relief request required for staff review and approval.**

CURRENT STATUS

- **Risk-Informed Inservice Inspection (RI-ISI) has been one of the most successful risk-informed initiatives.**
- **Number of plants expected to implement RI-ISI programs: 99**
 - Submittals received to date: 71**
 - Anticipated Submittals: 29**
- **Number of Plants That Have Approved RI-ISI Programs**
 - Based on EPRI Methodology: 39**
 - Based on WOG Methodology: 13**
 - Number of Plants Approved by NRC (includes 3 pilots): 52**
 - Number of Plants Currently under Review: 19**
- **One site (2 Units) has submitted its 10-year Inservice Inspection Update**

RI-ISI GUIDANCE

- **Issued Regulatory Guidance (for Trial Use):**
 - **RI-ISI Regulatory Guide 1.178, Sep. 1998**
“An Approach For Plant-Specific Risk-Informed Decisionmaking Inservice Inspection of Piping”.
 - **Standard Review Plan Section 3.9.8, Sep. 1998**
“Standard Review Plan for the Trial Use For the Review of Risk-Informed Inservice Inspection of Piping”.
- **Approved well defined generic methodologies via Topical Reports (WOG and EPRI):**
 - **SER for WOG Topical Report issued in December 1998.**
 - **SER for EPRI Topical Report issued in October 1999.**
- **Staff issued information notice IN 98-44 which stated that the staff would consider granting relief of up to 2 years from current inspection requirements for licensees that intend to implement RI-ISI Programs if licensees make such a request.**

TEMPLATE SUBMITTALS

- **Adopted “template” submittal specifying the contents of the relief request :**
 - **brief description of evaluations performed**
 - **overview of results from each major evaluation**
 - **any deviations from methodologies must be identified and justified**
- **“Template” initially evolved but has stabilized**
- **Staff stated that a three-month review cycle would be possible if a submittal followed an approved methodology without any deviations.**

UPDATES TO RI-ISI PROGRAMS

- **RI-ISI programs should be living programs and should be changed if needed to reflect new relevant information such as:**
 - **major updates to plant PRA models**
 - **new trends in service experience with piping systems at the plant and across the industry**
 - **new information on element accessibility**
- **At a minimum, risk ranking should be reviewed and adjusted on an ASME-period basis.**
- **RI-ISI programs should be updated and submitted to NRC:**
 - **at the end of the 10-year ISI interval**
 - **prior to the end of the 10-year interval if there is a deviation from the RI-ISI methodology described in the initial submittal, or if industry experience determines that there is a need for significant revision to the program**

APPLICATION TO BER PIPING

- **Modification of inspections within the break exclusion region (BER) not permitted in the original EPRI and WOG RI-ISI methodologies.**
- **Both EPRI and WOG have developed methodologies to apply RI-ISI methodology to piping within the BER.**

SER on EPRI submittal completed in June 27, 2002

WOG Submittal currently under review

- **When BER program is in FSAR, the extension of RI-ISI methodology to BER piping may be done via the 10 CFR 50.59 process**

LONG-TERM ACTIVITIES

- **Update RG 1.178 and SRP 3.9.8 to incorporate lessons learned.**
- **Staff is working with ASME to develop acceptable Code Cases and an Appendix for RI-ISI applications.**
 - **Code Case N-560 (Class 1, EPRI Method).**
 - **Code Case N-577 (Class 1, 2, 3, WOG Method).**
 - **Code Case N-578 (Class 1, 2, 3, EPRI Method).**
 - **Appendix X (Class 1, 2, 3, WOG and EPRI Methods).**
- **Endorsement of Code Cases in RG 1.147, with limitations and conditions where appropriate.**
- **Anticipate that Code Cases will be incorporated into the ASME Code.**
- **Eventual rulemaking to incorporate by reference the ASME Code with limitations, if necessary.**



PROPOSED CHANGES TO RISK INFORMED
INSERVICE INSPECTION REGULATORY
GUIDE 1.178 AND SRP SECTION 3.9.8

May 8, 2003

SYED ALI RES/DET/ERAB
STEPHEN DINSMORE NRR/DSSA/SPSB
ANDREA KEIM NRR/DE/EMCB

RI-ISI RG AND SRP ISSUED SEPTEMBER 1998

- **RG and SRP were issued for “Trial-use”**
 - **Review of three pilot applications was not complete**
 - **Review of two industry methodologies was not completed**
- **Proposed changes are minor**
 - **Public workshop held March 13, 2003**
 - **Incorporate lessons learned from review of submittals (clarification changes)**
 - **Up-date and simplify text (editorial changes)**
- **One proposed content change adds guidance not yet applied to RI-ISI submittals**

Content Change

- The PRA quality documentation requirement expanded to include the observations from industry peer reviews and the resolution of significant comments applicable to RI-ISI evaluation

CLARIFICATION CHANGES

- **The submittal requirements were expanded to include PRA related information routinely submitted and evaluated in current staff RI-ISI reviews**
 - **Reference number/version of the PRA**
 - **Current CDF and LERF**
 - **Process to ensure that PRA used represented current plant**
 - **Results of staff individual plant examination review and the resolution of significant comments applicable to RI-ISI evaluation**

- **Template submittals recognized**
 - **Documentation requirements in approved topical reports may supercede the detailed RG/SRP requirements.**

CLARIFICATION CHANGES

- **Three break size (leak, disabling leak, and break) discussion removed**
 - **All applicable effects must be included**
- **Maintaining leak frequency discussion removed**
 - **Experience with statistical sampling methodology is that leak frequency criteria satisfied by one inspection**
- **Incorporating augmented programs into RI-ISI**
 - **Is acceptable**
 - **Requires staff review and approval of how the augmented programs are incorporated in the analyses**

CLARIFICATION CHANGES

- **Sample expansion (after finding a flaw) and timing guidelines specified**
- **Clarification that safety-significant non-Code Class piping is treated as ASME Code Class piping for the purpose of examination and pressure testing.**

Major Editorial Changes

- **All the discussion about pilot applications and issuing the RG and SRP for trial use have been removed.**
- **All figures and tables in the RG were removed, and the SRP had none.**
- **All text in Section 2.1.7, “Probabilistic Fracture Mechanics Evaluation,” was moved to Section 2.1.5, “ Assess[ing] Piping Failure Potential.”**
- **All the discussions regarding the multiple ASME Section XI risk-informed code cases were removed. When the ASME guidance is complete and endorsed by the NRC, these references can be inserted into future revisions of the guidance as needed.**

Major Editorial Changes

- **A number of references to specific sections of the updated RG 1.174 and SRP Chapter 19 were added.**
- **All reference to high-, medium-, and low- safety-significance in the RG and SRP have been removed. The current text replaces high-safety-significant with “safety-significant” and keeps “low-safety-significant” consistent with the revised RG 1.174**
- **References to generally PRA quality and peer reviews were taken from RG 1.174 and SRP Chapter 19, and a reference to DG-1122 was added.**

Operating Experience Task Force

Briefing for
Advisory Committee on Reactor Safeguards

May 8, 2003

Operating Experience Task Force

Purpose

- Provide ACRS an overview of the Operating Experience Task Force effort to review NRC's reactor operating experience program

Operating Experience Task Force

Background

- Davis-Besse Lessons-Learned Task Force (LLTF) Recommendations
- NRR/RES Operating Experience Working Group
- March 7, 2003, Davis-Besse Action Plan to address LLTF Recommendations
- March 28, 2003, Charter for Operating Experience Task Force

Operating Experience Task Force Charter

Objective

The objective of Reactor Operating Experience Task Force is:

“ . . . to evaluate the agency’s reactor operating experience program and to recommend specific program improvements . . . which addresses the recommendations of the Davis-Besse Lessons Learned Task Force . . . ”

Operating Experience Task Force

LLTF Recommendations

- 3.1.6(1) The NRC should take the following steps to address the effectiveness of its programs involving the review of operating experience: (1) evaluate the agency's capability to retain operating experience information and to perform longer-term operating experience reviews; (2) evaluate thresholds, criteria, and guidance for initiating generic communications; (3) evaluate opportunities for additional effectiveness and efficiency gains stemming from changes in organizational alignments (e.g., a centralized NRC operational experience "clearing house"); (4) evaluate the effectiveness of the Generic Issues Program; and (5) evaluate the effectiveness of the internal dissemination of operating experience to end users.

Operating Experience Task Force

LLTF Recommendations (Cont)

- 3.2.4(1) The NRC should assess the scope and adequacy of its requirements governing licensee review of operating experience.

Operating Experience Task Force

Task Force Members

Charles Ader, DSARE/RES - Task Force Manager

Ian Jung, DRIP/NRR

Don Marksberry, DRAA/RES

Jose Ibarra, DSARE/RES

George Lanik, DSARE/RES

David Fischer, DE/NRR

Jitendra Vora, DET/RES

James Tatum, DSSA/NRR

Allan Barker, DIPM/NRR

Serita Sanders, DIPM/NRR

David Beaulieu, DLPM/NRR

Robert Caldwell, DRIP/NRR

Marcia Karabelnikoff, DSARE/RES
- Administrative Support

Operating Experience Task Force

Steering Committee Members

William Borchardt - NRR

Jack Strosnider - RES

James Caldwell - R III

Operating Experience Task Force

Approach

- OE Program viewed broadly to include end-users
- Objective Phase
 - ▶ Identify desirable agency operating experience program objectives and attributes
- Assessment Phase
 - ▶ Define functional needs to meet program objectives and attributes
 - ▶ Perform gap and overlap analysis
 - ▶ Recommend specific program improvements and their bases

Operating Experience Task Force

Objective Phase

- Task Force has completed initial efforts to identify objectives and attributes
- Comments received from internal stakeholders
- Proposed objectives and attributes provided to steering committee

Operating Experience Task Force

Proposed Objectives

- Ensure that operating experience is collected, evaluated, communicated and applied to enhance safety
- Ensure that operating experience is used to improve the effectiveness, efficiency, and realism of NRC decisions
- Ensure that the public, Congress, and other external stakeholders are provided with timely information regarding operational experience, including actual or potential hazards to health and safety

Operating Experience Task Force

Proposed Attributes

- Clearly defined and communicated roles and responsibilities
- Efficient collection, storage, and retrieval of operating experience
- Effective screening of operating experience for followup evaluation
- Timely communication of operating experience to stakeholders for information or evaluation

Operating Experience Task Force

Proposed Attributes (Cont)

- Timely and thorough evaluations of operating experience to identify trends, recurring events, or significant safety issues for appropriate followup actions
- Timely decisions on implementation and appropriate followup resulting from the review of operating experience
- Periodic assessments of the operating experience program to determine its effectiveness and to identify needed improvements

Operating Experience Task Force

Objectives and Attributes

- Issue of independence raised by several internal stakeholders
- Task Force did not incorporate in objectives and attributes but will consider during assessment phase

Operating Experience Task Force

Schedule

- Recommend Objective and Attributes to Steering Committee -04/30/03 (Complete)
- Draft Report to Steering Committee recommending program improvements -9/30/03
- Final Report - 11/30/03

8

ACRS MEETING HANDOUT

Meeting No. 502	Agenda Item 10	Handout No.: 10.1
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Title **PLANNING & PROCEDURES/
FUTURE ACRS ACTIVITIES**

Authors
JOHN T. LARKINS

List of Documents Attached	10
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Instructions to Preparer 1. Paginate Attachments 2. Punch holes 3. Place Copy in file box	From Staff Person JOHN T. LARKINS/
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INTERNAL USE ONLY

G:PP:ppmins.502
May 9, 2003

SUMMARY MINUTES OF THE ACRS PLANNING AND PROCEDURES SUBCOMMITTEE MEETING MAY 7, 2003

The ACRS Subcommittee on Planning and Procedures held a meeting on May 7, 2003, in Room T 2 B3, 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 11:10 a.m. and adjourned at 12:30 p.m.

ATTENDEES

MEMBERS

M. Bonaca
G. Wallis

ACRS STAFF

J. T. Larkins
S. Bahadur
H. Larson
S. Duraiswamy
R. P. Savio
J. Gallo
S. Meador
M. Snodderly
H. Nourbakhsh
R. Caruso
M. Weston
M. El-Zeftawy
T. Kobetz

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 April ACRS meeting are attached (pp. 10-12). 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 ACRS meeting be as shown in the attachment (pp. 10-12).

2) Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through July 2003 is attached (pp. 10-12). The objectives are to:

- Review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate
- Manage the members' workload for these meetings
- Plan and schedule items for ACRS discussion of topical and emerging issues

During this session, the Subcommittee also discussed and developed recommendations on items included in Section II of the Future Activities List (pp. 13-14).

RECOMMENDATION

The Subcommittee recommends that the members provide comments on the anticipated workload. Changes will be made, as appropriate. The Committee should decide on the Subcommittee's recommendations on items in Section II of the Future Activities List.

3) 2004 ACRS Report on the NRC Safety Research Program

The Committee recently completed its 2003 report (NUREG-1635, Vol. 5) on the NRC Safety Research Program. The focus of that report was on the "Advanced Reactor Research Infrastructure Assessment" document prepared by the Office of Nuclear Regulatory Research.

Dr. Powers has agreed to take the lead for preparing the 2004 ACRS report. Consistent with discussion with the Commission, the 2004 report should cover all RES safety research programs.

As suggested by the Committee at the April 2003 ACRS meeting, Dr. Powers has developed a proposed strategy for preparing the 2004 research report. It has been distributed to the members during the May meeting for comment.

RECOMMENDATION

The Subcommittee recommends that the members provide feedback on the strategy proposed by Dr. Powers and that Dr. Powers present a proposed final strategy during the June 2003 ACRS meeting.

4) Revised Subcommittee Structure

A proposed revision to the ACRS Subcommittee structure was provided to the members during the April ACRS meeting, requesting comments by April 25, 2003. Comments received from Dr. Apostolakis, Dr. Powers, and Mr. Rosen were incorporated into the current revision (see handout). Significant changes to the Subcommittee structure include the following:

- Abolishment of Subcommittees

The Plant Systems Subcommittee has been abolished and the tasks of this Subcommittee have been assigned to Plant Operations and Human Factors Subcommittees.

The Natural Phenomena Subcommittee has been abolished and the tasks of this Subcommittee have been assigned to Regulatory Policies and Practices and Reliability and PRA Subcommittees.

- Chairmanship Changes

- Dr. Powers, who has agreed to take the lead for preparing the 2004 ACRS report on the NRC Safety Research Program, becomes the Chairman of the Safety Research Program Subcommittee.

- Mr. Rosen will become the Chairman of the Human Factors Subcommittee. Dr. Powers, current Chairman, will remain as a member of this Subcommittee.

- Subcommittee Member Assignments

- A table has been prepared (pp. 15-16) which proposes changes in Subcommittee membership to better balance the workload. These changes do not preclude a member from attending any subcommittee meeting.

The Planning and Procedures Subcommittee continues to evaluate the assignments and workload distributions for the members.

RECOMMENDATION

The Subcommittee recommends that the revised Subcommittee structure become effective on May 12, 2003. The full Committee will be kept informed of further changes to member assignments and workloads. The members should provide comments on the proposed changes to the Subcommittee membership at the May ACRS meeting.

5) Safety Culture Workshop

During the April 2003 ACRS meeting, the Committee agreed to hold a Workshop on Safety Culture on June 12, 2003, to discuss initiatives related to assessing safety culture and its impact on the safe operation of nuclear facilities. Dr. Apostolakis, Chairman of the Reliability and PRA Subcommittee, has the lead for this workshop. The Committee also decided to defer its report on Safety Culture until after this Workshop. A proposed schedule (p. 17) for this Workshop was discussed by the Planning and Procedures Subcommittee during its meeting on May 7, 2003. Individuals/organizations who have been invited to participate in the Workshop are included in the proposed schedule.

Subsequent to the Workshop, the Committee will consider revising the proposed report on Safety Culture.

RECOMMENDATION

The Subcommittee recommends the following:

- During the discussion session of the workshop, the participants should be requested to provide their views on "the feasibility of developing quantitative measures" for assessing the safety culture.
- The Committee should provide comments on the proposed schedule during the May 2005 ACRS meeting.
- During the May meeting, the Committee should discuss the proposed ACRS report on Safety Culture and develop a list of issues and concerns of the members to discuss at the Workshop in June.
- If the representative of IAEA cannot attend the Workshop, the ACRS staff should invite a representative from the Nuclear Energy Agency (NEA) involved in their report on safety culture.
- The members should ask questions after the presentation is completed to facilitate completing the presentation in a timely manner.

6) Visit to Plant/Region I

During the April 2003 ACRS meeting, the members agreed to visit the Peach Bottom Nuclear Plant on Monday, June 9, 2003, and the Region I Office on Tuesday, June 10, 2003. Arrangements are being made for these visits.

RECOMMENDATION

The Subcommittee recommends that the ACRS staff provide the particulars (travel arrangements, hotel, etc.) for these visits.

7) Staff Requirements Memorandum

Attached is the Staff Requirements Memorandum (SRM) (p.18) resulting from the ACRS meeting with the NRC Commissioners on April 11, 2003. In the SRM, the Commission states the following:

- ▶ The Commission appreciates the ACRS participation in multilateral meetings of nuclear regulatory advisory Committees, as appropriate. The Committee should consider including nuclear regulatory advisory Committees from other countries in future multilateral meetings.
- ▶ In the course of its routine activities of reviewing and advising the commission on reactor issues, the Committee should explore and consider other international regulatory approaches. Where there are significant differences in regulatory approaches and requirements, the Commission should be informed.
- ▶ The ACRS is welcome to propose changing the frequency and nature of its review and evaluation of the NRC Safety Research Program so that it is most useful to the Commission.

RECOMMENDATION

The Subcommittee recommends the following:

- The Committee should establish a mechanism to explore international regulatory approaches and to keep the Commission informed of those regulatory approaches and requirements that are significantly different than those in the U.S. [One of the suggested approaches is that during the discussion of a topic, the Subcommittee and/or the full Committee should ask the staff to address foreign regulatory approaches associated with that particular topic and how they differ from those of the U.S.] Additionally, the ACRS contractor, LINK, could assess regulatory differences in current and emerging issues.
- Dr. Powers should propose the need for changing the frequency and nature of the ACRS review of the NRC Safety Research Program.

8) Commission Decision on Risk Informing 10 CFR Part 50 (Option 3) and 10 CFR 50.46

The Commission's March 31, 2003, Staff Requirements Memorandum (pp. 19-22) on Risk Informing Changes to 10 CFR Part 50 (Option 3) and Recommendations on Risk Informing Changes to 10 CFR 50.46 directs the staff to redefine the design basis large-break loss-of-coolant accident (LOCA) in view of the apparent low risk associated with such events. The Commission asked the staff to provide the Commission with a comprehensive "LOCA failure analysis and frequency estimation" that is realistically conservative and amenable to decision-making subject to the comments and

considerations noted in the SRM. Realistically conservative estimations, with appropriate margins for uncertainty, should be used. The Commission has asked for a rule change in March 2004.

During the April 2003 ACRS meeting, the Committee suggested that Drs. Shack and Wallis review SRM and propose a course of action. Based on Mr. Snodderly's communication with the staff, we understand that the staff plans to submit a Commission paper prior to forwarding the proposed rule.

In the meantime, the staff still plans to conduct the expert elicitation in July 2003 to address the SRM issue that "the staff should conduct a practical reconciliation of LOCA frequency distributions by the 1) expert use of service-data, 2) probabilistic fracture mechanics (PFM), and 3) expert elicitation to converge the results." The Committee should consider hearing a briefing by the staff in July 2003 prior to the staff conducting the expert elicitation and provide feedback with regard to issues and questions to be raised in expert elicitation.

RECOMMENDATION

The Subcommittee recommends that the Committee hear a briefing on expert elicitation during the July ACRS meeting. Once the staff has established its plans for responding to the SRM, Drs. Shack and Wallis should develop a plan for ACRS review of matters associated with risk-informing 10 CFR 50.46.

9) Proposed Rulemaking to Add New Section 10 CFR 50.69

In an SRM dated March 28, 2003 (pp. 23-24), the Commission approved publishing a proposed rule and related draft regulatory guidance concerning the risk-informed categorization and treatment of structures, systems, and components, subject to several comments noted in the SRM.

The staff plans to issue the proposed 10 CFR 50.69 for public comment on May 16, 2003. The public comment period will end on July 30, 2003. The staff is willing to brief the ACRS Subcommittee on Reliability and PRA after NEI has completed Revision D to NEI 00-04 and the staff has incorporated, as appropriate, NEI guidance into DG-1121. This is expected to occur in the fall of 2003. The schedule for publishing the final 10 CFR 50.69 is August 2004. The staff will brief the ACRS on the proposed final rule in July 2004.

RECOMMENDATION

The Subcommittee recommends that the Reliability and PRA Subcommittee hold a meeting in the fall of 2003 to discuss the status of resolution of public comments on proposed 10 CFR 50.69, DG-1121, and NEI 00-04, Rev. D.

10) ACRS Self Assessment Report for 2002-2003

The ACRS staff has interviewed all of the NRC Commissioners, the EDO, NRR Office Director, RES Office Director, NMSS Office Director, and other internal managers and staff to get their views on how well the ACRS has been performing over the last 12-14 months as input to the required periodic self-assessment paper. Dr. Savio has conducted an interview of a number of stakeholders to assess their views on how well the ACRS has been performing. A draft Commission paper (see separate handout), documenting the results of interviews is provided for review and comments by the Subcommittee and the full Committee. The Commission paper on ACRS/ACNW Self-Assessment should be submitted to the Commission on May 31, 2003.

RECOMMENDATION

The Subcommittee recommends that the ACRS members provide comments on the draft Commission paper.

11) Future Quadripartite Meetings

During the April ACRS meeting, the ACRS/ACNW Executive Director informed the Committee that he had received a letter from Guenter Weimer of the RSK concerning future Quadripartite meetings (pp. 25-26). In his letter, Mr. Weimer suggests that reactor safety remain the principal scope of the Quadripartite meetings and that nuclear waste and transportation issues be considered as general topics related to reactor safety. Detailed or specific discussions of waste disposal issues be considered at separate meetings. Additionally, the RSK suggests that Switzerland (KSA) and Sweden (RSN) be invited for future meetings and asked to present papers. Future meetings should allow more time for discussions. The ACRS/ACNW Executive Director has issued a positive response to Mr. Weimer.

RECOMMENDATION

The Subcommittee recommends that the ACRS Executive Director keep the Committee informed of future developments. In addition, the Executive Director should inform RSK and seek feedback on the Commission's statement in the April 28, 2003 SRM that "the Committee should consider including nuclear regulatory advisory Committees from other countries in future meetings."

12) Budget

As we enter the last half of the fiscal year, it is important that we continue to keep a tight watch over our travel expenditures. Since the last meeting, there have been several new meetings added to the list of activities already scheduled for the remainder of the fiscal year. Each time a new meeting is added it increases our travel expenditures by the thousands, and we have to realign our budget allocation to accommodate the additional cost. For example, budget allocations that were identified for upgrades to the conference room and some office supplies have been reallocated

to the travel category so that additional meetings could be conducted. At this time, we have realigned the budget to the extent feasible, and we must now look at consolidating and prioritizing additional travel and the purchase of office supplies.

RECOMMENDATION

The Subcommittee recommends that the Safeguards and Security Subcommittee meeting be held on July 9, 2003, provided it does not impact the staff's ability to provide timely information to the Commission. All credit card purchases for supplies should be called in and purchased through Tanya Winfrey. Members should not use their government-issued bank cards.

13) Comments on NUREG/CR-6813, Issues and Recommendations for Advancement of PRA Technology in Risk-Informed Decisionmaking

We recently published NUREG/CR-6813 prepared by Mr. Fleming under a contract with the ACRS/NRC. Mr. Lochbaum, Union of Concerned Scientists, has sent some comments (pp. 27-28) on this report to the NRC Office of Public Affairs (OPA). Mr. Fleming prepared a response (pp. 29-32) to Mr. Lochbaum, addressing every comment made by Mr. Lochbaum and sent it to Dr. Nourbakhsh. Mr. Lochbaum's comments and Mr. Fleming's response were e-mailed to all members by Dr. Nourbakhsh on May 5, 2003. The ACRS Executive Director e-mailed Mr. Fleming's response to OPA, NRR, and Mr. Lochbaum on May 5, 2003. Mr. Lochbaum's response to Mr. Fleming and Mr. Fleming's response to Mr. Lochbaum are attached (pp. 33-35).

RECOMMENDATION

The Subcommittee recommends the following:

- The ACRS Executive Director should keep the Committee informed of any comments from the NRC Staff and others on NUREG/CR-6813.
- There is no need for the Committee to respond to Lochbaum's comments. Mr. Fleming's response is adequate.
- The Committee should decide whether to prepare a "White Paper," as originally intended, on the use of PRA in the regulatory decisionmaking process in addition to the report on Advancement of PRA Technology to Improve Risk-Informed Decisionmaking.
- In the future, the members should review the contractor's report (if any) carefully and provide feedback on the technical adequacy, clarity, and appropriateness of conclusions and recommendations.

14) Meeting with the Executive Director for Operations

During the June full Committee meeting, the members of the Planning and Procedures Subcommittee are scheduled to meet with the EDO and his deputies during lunch on Friday, June 13 to discuss items of mutual interest.

RECOMMENDATION

The Subcommittee recommends that the members propose a list of topics for the Planning and Procedures Subcommittee to discuss with the EDO and his deputies during this meeting.

ANTICIPATE WORKLOAD

MAY 8-10, 2003

LEAD MEMBER	BACKUP	LEAD ENGINEER/ BACKUP	ISSUE	PRIORITY	BASIS FOR REPORT PRIORITY	AVAIL. OF DRAFTS
Apostolakis	--	Nourbakhsh	Advancement of PRA Technology to Improve Risk-Informed Decisionmaking	A	To provide Committee's views to the Commission	Draft
		Weston	SUBCOMMITTEE REPORT - Integrated Industry Initiating Event Performance Indicator	--	--	--
Bonaca	All Members	Savio	Draft Commission Paper on ACRS Self Assessment	--	SRM due date May 31, 2003	--
Ford	--	Weston	Vessel head penetration cracking and vessel head degradation	A	To provide feedback to the Commission	--
Powers	--	Weston/Caruso	SUBCOMMITTEE REPORT - MOX Fuel Fabrication Facility	--	--	--
Sieber	--	Caruso/Weston	Operating Experience Program Effectiveness	--	--	--
Shack	--	Snodderly/ Duraishwany	Proposed revisions to SRP Section 3.9.8 and Reg. Guide 1.178 for risk-informed inservice inspection of piping	A	To support the staff's schedule	--

ANTICIPATED WORKLOAD JUNE 12-13, 2003

LEAD MEMBER	BACKUP	LEAD ENGINEER/ BACKUP	ISSUE	PRIORITY	BASIS FOR REPORT PRIORITY	AVAIL. OF DRAFTS
Apostolakis	--	Savio	Safeguards and Security Letter Report	A	To provide early feedback to the Commission	--
		Weston/EI-Zeftawy	Workshop on Safety Culture	--	--	--
		Weston	Safety Culture Report	A	To provide Committee's views to the Commission	--
Bonaca	Leitch	Caruso	Interim review of the Ft. Calhoun license renewal application - SUBCOMMITTEE REPORT	--	--	--
Leitch	Bonaca	Duraiswamy	Update to Generic License Renewal Guidance Documents	Report to be completed in July	SRM due date July 17, 2003	--
		Weston	Significant Recent Operating Events [TENTATIVE]	--	--	--
Powers	--	Savio/Nourbakhsh	Strategy for preparing the 2004 ACRS report on the NRC Safety Research Program	--	--	

ANTICIPATED WORKLOAD JULY 9-11, 2003

LEAD MEMBER	BACKUP	LEAD ENGINEER/ BACKUP	ISSUE	PRIORITY	BASIS FOR REPORT PRIORITY	AVAIL. OF DRAFTS
Apostolakis	--	Weston	Safety Culture Report [If not completed in June]	A	To provide committee's views to the Commission	Draft
Kress	--	Duraiswamy	Proposed Criteria for Treatment of Individual Requirements in a Regulatory Analysis	A	To provide feedback to the staff	
		EI-Zeftawy	ESBWR pre-application review	--	--	--
Leitch	--	Weston	Significant recent Operating events	--	--	--
		Duraiswamy	Update to Generic License Renewal Guidance Documents-Response to SRM	A	Response due to the Commission 5/17/2003	--
Powers	--	Weston	Mixed Oxide Fuel Fabrication Facility [TENTATIVE]	A	To provide early feedback to the Commission	
Wallis	Ransom	Caruso	Draft final Reg. Guide DG-1107, Water Sources for Long-Term Recirculation Cooling Following a LOCA and Draft final Generic Letter 2003-xx, Potential Impact of Debris Blockage on Emergency Recirculation Design-Basis Accidents at PWRs	A	To support staff schedule	--
	Shack	Snodderly	Expert Elicitation as directed by the Commission in the March 31, 2003 SRM related to risk-informing 10CFR 50.46.	--	--	--

II. ITEMS REQUIRING COMMITTEE ACTION

1. Rulemaking on Risk-Informing 10 CFR 50.46, Acceptance Criteria for ECCS for Light-Water Nuclear Power Reactors (Open) (WJS/GBW/RC)

Purpose: Determine a Course of Action

Review requested by the NRC staff [E. McKenna, NRR]. The Commission's March 31, 2003, Staff Requirements Memorandum on Risk Informing Changes to 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informing Changes to 10 CFR 50.46 directs the staff to redefine the design basis large-break loss-of-coolant accident (LOCA) in view of the apparent low risk associated with such events. The Commission asked the staff to provide the Commission with a comprehensive "LOCA failure analysis and frequency estimation" that is realistically conservative and amenable to decision-making subject to the comments and considerations noted in the SRM. Realistically conservative estimations, with appropriate margins for uncertainty, should be used. The Commission has asked for a rule change in March 2004.

During the April 2003 ACRS meeting, the Committee suggested that Drs. Shack and Wallis review the SRM and propose a course of action. Based on Mr. Snodderly's communication with the staff, we understand that the staff plans to submit a Commission paper prior to forwarding the proposed rule. In the meantime, the staff still plans to conduct an expert elicitation in July 2003 to address the SRM issue that "the staff should conduct a practical reconciliation of LOCA frequency distributions by the 1) expert use of service-data, 2) Probabilistic Fracture Mechanics (PFM) and 3) expert elicitation to converge the results." The Committee should consider a briefing by the staff in July 2003 prior to the staff conducting the expert elicitation

The Planning and Procedures Subcommittee recommends that the Committee hear a briefing by the staff at the July 2003 ACRS meeting and that Drs. Shack and Wallis provide their views regarding the briefing by the staff at the July meeting.

2. Rulemaking on Add New Section 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components." (Open) (GEA/MRS)

Purpose: Determine a Course of Action

Review requested by the NRC staff [T. Reed, NRR]. In a Staff Requirements Memorandum, dated March 28, 2003, the Commission approved publishing the proposed rule and related draft regulatory guidance concerning the risk-informed categorization and treatment of structures, systems, and components, subject to seven comments. The staff plans to issue the proposed 10 CFR 50.69 and related regulatory guidance for public comment on May 16, 2003. The public comment period will end on July 30, 2003. The staff is willing to brief the ACRS Subcommittee on Reliability and PRA after NEI has completed Revision D to NEI 00-04, "10 CFR 50.69 Structures, Systems, and Components Categorization Guideline," and the staff has incorporated, as appropriate, NEI guidance into

DG-1121. This is expected to occur in the Fall of 2003. The Schedule for publishing the final 10 CFR 50.69 is August 2004. The staff will brief the ACRS on the proposed final rule in July 2004.

The Planning and Procedures Subcommittee recommends that the Reliability and PRA Subcommittee hold a meeting in the Fall of 2003 to discuss the status of resolution of public comments on the proposed 10 CFR 50.69, DG-1121, and NEI 00-04, Revision D. Dr. Apostolakis should provide his views.

**ACRS Subcommittee Assignments for
Members (May 7, 2003)**

	GEA	MVB	FPF	TSK	GML	DAP	SR	VR	JDS	WJS	GBW
Fire Protection	x					x	X		x		x
Future Plant Designs	x			X		x		x		x	x
Human Factors	x	x				x	X				
Materials & Metallurgy			X			x			x	x	
Naval Reactors					x			x	X		x
Planning and Procedures		X					x				x
Plant License Renewal - I		X			x			x	x	x	
Plant License Renewal - II		x	x		X		x				x
Plant Operations.		x			x		x		X		
Reactor Fuels			x	x		X				x	
Reg. Policies and Practices				x	x			x		X	
Reliability and PRA	X	x	x	x			x				
Safety Research Program			x	x		X		x		x	x

**ACRS Subcommittee Assignments for
Members (May 7, 2003)**

	GEA	MVB	FPF	TSK	GML	DAP	SR	VR	JDS	WJS	GBW
Safeguards and Security	X	x			x	x	x		x	x	
T-H Phenomena			x	x				x	x		X
Joint ACRS/ ACNW Sub	x			X							
TOTAL	6	7	6	7	6	7	7	6	7	7	7

(BOLD) X - Chairman

x - Member

Crossed out "x" indicates a proposed deletion from the Committee

PROPOSED AGENDA (June 12, 2003)

COLLECTIVE UNDERSTANDING OF SAFETY CULTURE (PANEL A)

- | | |
|--|------------------|
| I. Introductory Statement - ACRS (G. Apostolakis) | 8:30- 8:35 a.m |
| II. Director of NRC Office/ RES (A. Thadani) | 8:35- 9:00 a.m |
| III. Nuclear Energy Institute (Jim Davis) | 9:00- 9:30 a.m |
| IV. International Atomic Energy Agency (Terry Taylor) | 9:30- 10:00 a.m |
| ***BREAK*** | 10:00- 10:15 a.m |
| V. Mr. Howard Whitcomb, III | 10:15- 10:45 a.m |
| VI. Mr. David Collins | 10:45- 11:15 a.m |
| VII. Millstone (Allen Price/Dominion) | 11:15- 11:45 a.m |
| VIII. Conclusion and General Discussion | 11:45- 12:45 p.m |
| ***LUNCH** | 12:45- 1:45 p.m |

ATTRIBUTES OF SAFETY CULTURE (PANEL B)

- | | |
|---|----------------|
| IX. Introductory Statement- ACRS (G. Apostolakis) | 1:45- 1:50 p.m |
| X. NRC Staff - Overview & Status (D. Trimble) | 1:50- 2:20 p.m |
| XI. Institute of Nuclear Power Operations (Fred Tollison) | 2:20- 2:50 p.m |
| XII. Davis Besse (First Energy Nuclear Operating Co./
FENCO- Bob Saunders) | 2:50- 3:20 p.m |
| ***BREAK*** | 3:20- 3:30 p.m |
| XIII. 0350 Panel (Jack Grobe) | 3:30- 4:00 p.m |
| XIV. Fermi (Vice-President) | 4:00- 4:30 p.m |
| XV. Conclusion and General Discussion | 4:30- 5:30 p.m |



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

IN RESPONSE, PLEASE
REFER TO: M030411A

OFFICE OF THE
SECRETARY

April 28, 2003

MEMORANDUM TO: John T. Larkins,
Executive Director ACRS/ACNW

FROM: Annette L. Vietti-Cook, Secretary 

SUBJECT: STAFF REQUIREMENTS - MEETING WITH ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS (ACRS), 9:00 A.M.,
FRIDAY, APRIL 11, 2003, COMMISSIONERS' CONFERENCE
ROOM, ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND
(OPEN TO PUBLIC ATTENDANCE)

The Commission was briefed by members of the ACRS on the following topics:

1. Overview
2. Advanced Reactor Designs
3. Pressurized Thermal Shock (PTS) Reevaluation Project
4. ACRS 2003 Report on the NRC Safety Research Program

The Commission appreciates the ACRS's participation in multilateral meetings of nuclear regulatory advisory committees, as appropriate. The Committee should consider including nuclear regulatory advisory committees from other countries in future meetings. In the course of its routine activities of reviewing and advising the Commission on reactor issues, the Committee should explore and consider other international regulatory approaches. Where there are significant differences in regulatory approaches and requirements, the Commission should be informed.

The ACRS is welcome to propose changing the frequency and nature of its review and evaluation of the NRC safety research program so that it is most useful to the Commission.

cc: Chairman Diaz
Commissioner Dicus
Commissioner McGaffigan
Commissioner Merrifield
EDO
OGC
CFO
OCA
OIG
OPA
Office Directors, Regions, ACRS, ACNW, ASLBP (via E-Mail)
PDR

John T. Larkins

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March 31, 2003

MEMORANDUM TO: William D. Travers
Executive Director for Operations

FROM: Annette L. Vietti-Cook, Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS - SECY-02-0057 - UPDATE TO SECY-01-0133, "FOURTH STATUS REPORT ON STUDY OF RISK-INFORMED CHANGES TO THE TECHNICAL REQUIREMENTS OF 10 CFR PART 50 (OPTION 3) AND RECOMMENDATIONS ON RISK-INFORMED CHANGES TO 10 CFR 50.46 (ECCS ACCEPTANCE CRITERIA)"

The Commission has approved in part and disapproved in part the staff's recommendations provided in this SECY paper.

Emergency Core Cooling System (ECCS) spectrum of break sizes and locations

The Commission has agreed to consider redefining the design basis large-break loss-of-coolant accident (LOCA) in view of the apparent low risk associated with such events. The staff should provide the Commission a comprehensive "LOCA failure analysis and frequency estimation" that is realistically conservative and amenable to decision-making subject to the comments and considerations noted below. Realistically conservative estimations, with appropriate margins for uncertainty, should be used. ~~In doing so, the staff should take the following points into account.~~

1. The staff should use a 10-year period for the estimation of LOCA frequency distributions, with a rigorous re-estimation conducted every 10 years and a review for new types of failures every 5 years. There should be careful consideration of the implications of the 10-year frequency for the reexamination of LOCA frequency distributions. Operational changes should be reversible if the re-estimation results in unacceptable LOCA frequency increases. The staff will define what is considered "acceptable."
2. The staff should conduct a practical reconciliation of LOCA frequency distributions by the 1) expert use of service-data, 2) Probabilistic Fracture Mechanics (PFM) and 3) expert elicitation to converge the results. Both service-data and PFM estimates should be "reduced" to an appropriate set by "expert discrimination" of what data should be treated. Not all data is "born" equally nor should it be treated equally. For the purpose of LOCA estimation, a better discrimination of failure data is needed before it is used as predictive data. Service-based LOCA estimates (a statistical analysis of service experience data) are more useful than PFM, especially if the projection is limited to 10 years. PFM (a phenomena-based method using fracture and failure analysis) can make a contribution,

Stem
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more so if it is used to selectively converge to service data predictions.

There are some operating plants for which the preponderance of the overall risk results from accidents other than LOCAs (e.g., all BWRs). Thus, defining the LBLOCA on a plant-specific basis in terms of only the LOCA contributors to risk will create significant differences from plant to plant. That is, a plant with small LOCA contributors to overall core damage frequency (CDF) would have to consider initiating events with much lower frequencies than plants with relatively large contributions from LOCAs to overall CDF.¹ This would have the perverse result of penalizing a plant for which LOCAs already comprise a relatively small percentage of overall CDF. In order to avoid this dilemma, it might be appropriate to consider an approach in which the alternative maximum LOCA to be included within the design basis is established on a plant-specific basis using some percentage of the total CDF risk, rather than the risk associated only with LOCAs. Regardless of the specific approach, any proposed changes should be risk-informed and consistent with the principles of RG 1.174.

The staff should consider the full range of contributors to LOCAs, even if those contributors do not include actual pipe breaks. These include not only large pipe breaks, but also failures of large components, such as steam generator manways and reactor vessel head penetrations.

The staff should credit leak-before-break considerations only in conjunction with the establishment by a licensee of reliable and comprehensive means to detect primary system leaks of the relevant size.

3. The staff should use expert elicitation to converge (whenever possible) service-data and PFM results to provide the Commission a comprehensive "LOCA failure analysis and frequency estimation" predictive envelope that is realistically conservative.

The staff must establish the appropriate risk "cutoff" for defining the maximum LOCA size. The risk metric recommended by the staff should take into account the uncertainties in PRA analysis as well as the uncertainties in estimating the initiating event frequencies for rare events (e.g., 95% probability with a 95% confidence limit).

In parallel with the above technical work, the staff should prepare a proposed rule change to 10 CFR Part 50 that allows for a risk-informed alternative to the present maximum LOCA break

¹ This can be illustrated using the PRA studies in NUREG-1150. For the Surry plant, (Westinghouse three-loop PWR), the mean CDF for internal events is $4.0E-5$, and the mean CDF from all LOCAs is approximately $7.6E-6$. Using a LBLOCA size that accounts for 95% of the LOCA CDF would thus account for about 18% of overall plant CDF and would eliminate from consideration LOCAs accounting for about 1% of CDF. However, for Peach Bottom, a BWR-4 plant, the overall mean CDF for internal events is $4.5E-6$ and that from all LOCAs is $2.6E-7$. Using 95% of LOCA CDF would require consideration of events that comprise about 5% of overall plant CDF, and would eliminate from consideration LOCAs that account for only about 0.3% of overall CDF.

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size. The rule should be very specific, ensuring that the pertinent risk parameters are addressed and only the non-significant contributions to risk are handled through severe accident risk management. For example, the modified definition of the LOCA, for use throughout Part 50 and wherever applicable, could read:

Loss of coolant accidents (LOCA). Loss of coolant accidents mean those postulated accidents that result from the loss of reactor coolant at a rate in excess of the capability of the reactor coolant makeup system from breaks in the reactor coolant pressure boundary up to and including a break equivalent in size to the double-ended rupture of the largest pipe of the reactor coolant system or up to an alternate maximum break size determined by including at least XX% [e.g., 95%, 96%...] of the LOCA failure contributors to core damage frequency.

While pertinent changes in the design basis and associated analysis would be expected to occur naturally, the Commission agrees with the staff that changes in hardware and operation "would require that it be demonstrated that the ECCS functional reliability is commensurate with the frequency of accidents in which ECCS success would prevent core damage or a large early release". The Commission does not support changes to functional requirements unless they are fully risk-informed and protective of public health and safety. For example, the Commission would not support actual changes to ECCS coolant flow rates or containment capabilities to mitigate accidents, but would support changes that provide for risk-informed sequencing of equipment with demonstrated functionality and reliability requirements that arise from the alternate criteria. The staff should maintain similar margins in future plant design certifications, even if we ultimately adopt a revised LBLOCA definition.

The redefinition of the LBLOCA would also require strict configuration controls and a high quality PRA, including low power and shutdown operations. In establishing guidance for these configuration controls, the staff should, to the maximum extent practical, make use of the existing regulatory infrastructure provided through the Reactor Oversight Process, the Maintenance Rule and Regulatory Guide 1.174. Once the appropriate standards are in place, the PRA should be a level 2 internal- and external-initiating event all mode PRA, which has been subjected to a peer review process and submitted to and endorsed by the NRC.

The technical basis supporting the LB-LOCA break size redefinition, supported by a 10-year estimation of LOCA frequencies, should be completed by March 31, 2004. The proposed rule changes should be provided to the Commission.

(EDO)

(SECY Suspense: 3/31/04)

ECCS acceptance criteria

The Commission has approved the staff's recommendation to proceed with modifications to 10 CFR 50.46 to provide for a more performance-based approach to meeting ECCS acceptance criteria. This includes the development of acceptance criteria for cladding performance such that licensees would be able to use materials other than Zircaloy or ZIRLO without an exemption. However, this approach should not relieve licensees of the need to provide an adequate technical basis to demonstrate that other cladding materials can meet the performance-based criteria.

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ECCS reliability

The Commission has approved the staff's recommendation to proceed with rulemaking, as an option, to risk-inform the ECCS functional reliability requirements in General Design Criterion 35, and thus relax the current requirements for consideration of a large-break loss of coolant accident (LBLOCA) coincident with a loss of offsite power (LOOP). The staff should move forward with the development of the necessary regulatory changes and continue their dialogue with industry and other external stakeholders in this area. In developing the technical bases supporting these changes, the staff should ensure that relevant issues and uncertainties that can impact plant risk are adequately considered (e.g., delayed LOOP and "double sequencing" of safety functions).

The staff should pursue a broader change to the single failure criterion and inform the Commission of its findings.

(EDO)

(SECY Suspende: 7/31/04)

The staff must include the need for a high quality PRA in the proposed rule.

ECCS evaluation model

The Commission has disapproved the staff's proposal to provide a voluntary alternative to Appendix K which would replace the 1971 ANS decay heat standard with the 1994 ANS standard. However, 10 CFR 50.46 should be modified to require that future applicants for design certification or for future construction should use best-estimate codes for LOCA analyses. Moreover, licensees who seek the benefit of the changes that redefine the design basis LBLOCA requirements should be required to use best-estimate codes. The staff should include such a modification in the proposed 10 CFR 50.46 rulemaking.

Other matters

The Commission has approved "unbundling" the proposals and proceeding with the development of separate rulemakings and also approved the staff's recommendation that separate rulemaking plans are not necessary for each of these actions. The staff should seek early public and stakeholder comments on all of these proposals and keep the Commission informed of progress. The staff should ensure that these changes are viewed in totality for identification of any potential cross-cutting impacts.

cc: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield
OGC
CFO

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March 28, 2003

MEMORANDUM TO: William D. Travers
Executive Director for Operations

FROM: Annette L. Vietti-Cook, Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS - SECY-02-0176 - PROPOSED
RULEMAKING TO ADD NEW SECTION 10 CFR 50.69,
"RISK-INFORMED CATEGORIZATION AND TREATMENT OF
STRUCTURES, SYSTEMS, AND COMPONENTS"

The Commission has approved publishing the proposed rule and related draft regulatory guidance concerning the risk-informed categorization and treatment of structures, systems, and components, subject to the following comments.

1. The staff should ensure that development of the rule proceeds in parallel with the issuance of the PRA standard and associated guidance.
2. The staff should ensure that adequate review guidance (i.e., a review standard) is developed in order to ensure that these reviews are conducted in an objective, consistent, complete and timely manner.
3. Relevant operational experience should be evaluated in an ongoing manner with the aim of reducing the uncertainty in assessing the effect of treatment on reliability and common-cause failures.
4. The staff should ask for specific comment in the Statements of Consideration on whether NRC should amend 50.69(c)(1)(i) to require a comprehensive high-quality PRA. For example, "This PRA should be a level 2 internal- and external-initiating event all mode PRA, which has been subjected to a peer review process and submitted to and endorsed by the NRC."
5. The staff should assess the details of any Reactor Oversight Process changes needed to address issues that may arise from licensees who implement this rulemaking. The staff should provide its assessment of the potential impact on future inspection efforts associated with licensee implementation in the final rulemaking package.
6. The staff should ask for specific comment in the Statements of Consideration on whether NRC should modify the rule to provide for NRC review and approval of a licensee's proposed treatment for RISC-3 SSCs.

Item 6

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7. **As a separate effort, the staff should take a more fundamental look at NRC quality assurance requirements to determine whether they are effectively and efficiently achieving their intended outcomes.**

cc: **Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield
OGC
CFO
OCA
OIG
OPA
Office Directors, Regions, ACRS, ACNW, ASLBP (via E-Mail)
PDR**



Geschäftsstelle der
Reaktor-Sicherheitskommission

RSK-Geschäftsstelle beim
Bundesamt für Strahlenschutz (BfS)

Datum: 24. Februar 2003
 Bearbeiter/in: Dr. Weimer
 Durchwahl: +49/1888/305-3720
 Telefax: +49/228 / 67 03 88
 e-Mail: gweimer@bfs.de

RSK-Geschäftsstelle beim BfS • Postfach 12 06 29 • 53048 Bonn

by e-mail

Groupe Permanent „Reacteurs“ (GPR),
 Groupe Permanent „Dechets“ (GPD),
 Groupe Permanent „Transports“ (GPT)
 Attn. Mr. Corentin Le Doaré

Nuclear Safety Commission (NSC)
 Attn. Mr. Masao Hori

Advisory Committee on Reactor Safeguards
 (ACRS),
 Advisory Committee on Nuclear Waste (ACNW)
 Attn. Dr. John Larkins

Future Quadripartite Meetings

Dear Sirs,

On behalf of Mr. Michael Sailer, chairman of the German Reactor Safety Commission (RSK) some proposals regarding future meetings of ACRS/ACNW,GPR/GPD/GPT, NSC and RSK:

During the Quadripartite Meeting in October 2002 in Berlin the participating Committees and Commissions jointly agreed to consider

- Scope of future meetings, e. g. extent of nuclear waste and transport issues to be treated,

- Course of sessions, e. g. gaining time for discussion,
- Attendance and contributions of Committees or Commissions others than France, Germany, Japan and United States.

The RSK would like to present these considerations.

- Reactor safety should remain the main scope of Quadripartite Meetings. Nuclear waste and transport issues should be incorporated into Quadripartite Meetings but restricted to general topics and to topics both related to reactor safety and to safety of storage, disposal and transport, e. g. probabilistic models and procedures.
- Detailed or specific topics related to safety of storage, disposal and transport of nuclear waste preferably should be dealt with in separate, independent meetings.
- Representatives from KSA(Switzerland) and RSN(Sweden) should be invited again and in future present papers.
- Presentations during these meetings should be restricted to key topics to achieve more time for discussions, e. g. the meeting should be run like a workshop.

As hosting office of the past Quadripartite Meeting we kindly request that you bring our considerations to the attention of respective Committees or Commissions. RSK kindly invites the partner organizations to comment on these considerations and to present their proposals.

As a follow up to the past Quadripartite Meeting the comments and proposals of ACRS/ACNW,GPR/GPD/GPT NSC and RSK regarding future meetings may be incorporated into the draft report under preparation by the RSK office covering papers, presentations, discussion contributions and Chairmen statements of the 2002 meeting.

Kind regards

Guenter Weimer

From: "Dave Lochbaum" <dlochbaum@ucsusa.org>
To: <WMB@nrc.gov>
Date: 4/30/03 3:35PM
Subject: NRC report on Davis-Besse

Good Day:

Attached are pages 13-17 from NUREG/CR-6813, a report dated April 2003 and recently issued by the NRC. It was authored by Karl Fleming, who is a long-time industry consultant with extensive experience in probabilistic risk assessment (PRA). Section 3.1 of this report (attached) covers Davis-Besse. Among Karl's statements:

- 1) "In the PRA [used to justify the 2001 shut down], it was simply an unverified assumption supporting the calculated risk with a level of certainty of 100%." page 13

This statement regarded the notion that "dry" boric acid cannot harm carbon steel and the related notion that Davis-Besse would only have "dry" boric acid. Both notions were all wet.

- 2) "Interestingly, the French lacked confidence in the same type of modeling assumption that were used to dismiss the wastage scenario back here in the U.S.." page 14

- 3) "In particular, the French were very concerned about uncertainties associated with inputs to the crack propagation models used to support the U.S. evaluations as several of the inputs to these models could not be estimated with sufficient accuracy, including details of the stress fields and inside surface temperatures of the vessel head." page 14

In other words, the French don't rely on luck to protect French citizens. Does the NRC have anything to learn from the French? Oui.

- 4) "The risk-informed evaluation was remiss in not including at least a sensitivity study to examine the impact of alternative modeling assumptions on the behaviour of underlying damage mechanism." page 15

Translation: If you must guess, try to bound your guess so you have some feel for the ballpark you're playing in.

- 5) "This is a stiking example of how epistemic uncertainties are not only available to challenge the results of a PRA, but also the validity of the conclusions derived from so-called deterministic safety evaluations." page 15

Translation: The alleged PRA used to justify the deferral decision was garbage.

- 6) "A PRA is only as good as the deterministic knowledge that is available to support the assumptions in the model."

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Translation: Don't make it up. If you don't have the facts, stop. Do not pass go. Do not pass December 31st.

- 7) "The risk-informed argument to delay the vessel head inspection by a few months at Davis-Besse incorporated the same naive modeling assumptions that were employed in the previous U.S. deterministic evaluations of this issue." page 15

Generally, "naivety" is not a cherished quality as a regulator. It can lead to things like, say, a football-sized hole in the primary pressure boundary of a reactor containing nearly 100 tons of highly radioactive material.

The entire report is available in ADAMS.

Thanks,

Dave Lochbaum
Nuclear Safety Engineer
Union of Concerned Scientists
1707 H Street NW Suite 600
Washington, DC 20006-3962
(202) 223-6133 x113
(202) 223-6162 fax

CC: <ajm@nrc.gov>, <CAL@nrc.gov>, <JAG@nrc.gov>

From: "Karl Fleming" <fleming@ti-sd.com>
To: "Hossein Nourbakhsh" <HPN@nrc.gov>
Date: 5/3/03 6:27AM
Subject: Re: Letter from Dave Lochbaum

Dear Hossein:

I have copied Mr. Lochbaum's statements below with my comments regarding his interpretation of remarks lifted from the NUREG. You may forward these comments to anyone who may be concerned with Mr. Lochbaum's remarks.

Karl

Good Day:

Attached are pages 13-17 from NUREG/CR-6813, a report dated April 2003 and recently issued by the NRC. It was authored by Karl Fleming, who is a long-time industry consultant with extensive experience in probabilistic risk assessment (PRA). Section 3.1 of this report (attached) covers Davis-Besse. Among Karl's statements:

- 1) "In the PRA [used to justify the 2001 shut down], it was simply an unverified assumption supporting the calculated risk with a level of certainty of 100%." page 13=20

This statement regarded the notion that "dry" boric acid cannot harm carbon steel and the related notion that Davis-Besse would only have "dry" boric acid. Both notions were all wet.

KNF Comment: The lifted quotes reflect the NUREG/CR-6813 author's interpretations of information presented in the NRC Lessons Learned report with a focus towards an issue that the ACRS has emphasized in their recent reports on risk informed regulation: namely the treatment of epistemic uncertainties in safety evaluations. I made it clear in my report that all of the author's insights on this topic are with the benefit of 20-20 hindsight. The characterization of this assumption as "all wet" is Mr. Lochbaums characterization, not mine, however the assumption in question is one that all agree is suspect. I do give the UCS some credit as it appears that they had a report on their website critical of the NRC and industry handling of the Alloy 600 cracking issue prior to the Davis-Besse event or at least prior to any analysis of the event. The UCS report that I found on their website within days of the news on the Davis Besse head degradation made some of the same points as I found in NRCs lessons learned report, in particular the comparison of how the French and the U.S. seemed to interpret the problem differently with respect to the ability to understand the underlying damage mechanisms. Having said that, I thought the NRC lessons learned report from which I developed my insights on this issue was outstanding in its self critical, un-defensive posture and I think that NRC report has developed the right conclusions on the path forward.

It is important to note that NUREG/CR-6813 is not the source of any scientific information on the causes and effects of the Davis-Besse Head Degradation event. It only represents one person's views on how we might benefit from the lessons learned largely contained in the NRC lessons learned report to improve future risk informed regulation.

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KNF comment: I have two comments on this remark. The first is that Mr. Lochbaum missed my point with this statement entirely. I was criticizing the deterministic evaluations of the Alloy 600 cracking issue that formed the basis for the PRA assumptions, not the PRA itself. Secondly, the PRA was not garbage, and in fact the conclusion of the PRA is still correct: namely that the risk impact of waiting 6 weeks to start the vessel head inspections was small, although perhaps not quite as small as the PRA was calculating. Again, the troubling issues with the treatment of uncertainties with this event, as comprehensively documented in the NRC lessons learned report, are with the deterministic aspects of the evaluations.

- 6) "A PRA is only as good as the deterministic knowledge that is available to support the assumptions in the model."

Translation: Don't make it up. If you don't have the facts, stop. Do not pass go. Do not pass December 31st.

KNF comment: I do not agree with the translation, which suggests that no decision should be made until all the uncertainties are eliminated. Again, I recommend that Mr. Lochbaum next review the works of Socrates.

- 7) "The risk-informed argument to delay the vessel head inspection by a=20 few months at Davis-Besse incorporated the same naive modeling assumptions that were employed in the previous U.S. deterministic evaluations of this issue." page 15

Generally, "naivety" is not a cherished quality as a regulator. It =
can
lead to things like, say, a football-sized hole in the primary =
pressure
boundary of a reactor containing nearly 100 tons of highly radioactiv=
e
material.

KNF comment: My characterization of naivety was with respect to an assumption made by the licensee in their risk informed request, not to any person and not the NRC. I have yet to meet any person in my career who has not made assumptions that they later discovered were naive once 20-20 hindsight was applied, and I do not think that anyone who does is necessarily naive.

I disagree with the conclusion drawn from my remark. In fact I would give the NRC as a whole very good marks on how it handled the Davis-Besse event. Let us be frank, this event exposed uncertainties about the progression of a damage mechanism (stress corrosion cracking leading to external corrosion and wastage) that nobody, even the French, was able to predict before the fact. Even with the NRC handling of the risk informed request to delay the inspection, they only granted a delay of 6 weeks which, with the benefit of hindsight, did not lead to a significant risk impact. Obviously the PRA arguments did not drive the basis for the request nor the decision making from the review of the request. Since the discovery of the event NRC took appropriate actions to reduce the probability that such a scenario will not repeat itself. The NRC was

>overrode its staff and elected not to issue the shutdown order.

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>Thanks,

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>Dave Lochbaum

>Nuclear Safety Engineer

>Union of Concerned Scientists

>1707 H Street NW Suite 600

>Washington, DC 20006-3962

>(202) 223-6133 x113

>(202) 223-6162 fax