



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

October 16, 1998

Mr. L. Joseph Callan
Executive Director for Operations
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Callan:

**SUBJECT: PROPOSED PRIORITY RANKINGS OF GENERIC SAFETY ISSUES:
TENTH GROUP**

During the 455th and 456th meetings of the Advisory Committee on Reactor Safeguards, September 2-4 and September 30-October 2, 1998, we reviewed the priority rankings proposed by the NRC staff for the Generic Safety Issues (GSIs) listed in Table A. During our review, we had the benefit of discussions with representatives of the NRC staff. We also had the benefit of the documents referenced.

Our comments on various GSIs considered during these meetings are contained in the following attachments:

Attachment 1 lists those GSIs for which we agree with the priority rankings proposed by the NRC staff.

Attachment 2 identifies the GSIs for which we agree with the priority rankings proposed by the staff, but have comments.

Attachment 3 identifies the GSI for which we disagree with the priority ranking proposed by the staff.

In addition to the comments on the proposed priority rankings, we offer the following comments and recommendations on the GSI process:

- Overall GSI Process

In recent years, the GSI process has not functioned properly. This may be attributed to frequent changes in management responsible for its implementation. The staff should improve its capability to perform cost/benefit analysis and to use the risk-informed approach in prioritizing and resolving GSIs.

Prioritization

In SECY-98-166, "Summary of Activities Related to Generic Safety Issues," the staff proposes to discontinue use of the term "nearly resolved" and to revise NUREG-0933 to reflect this change in terminology. This proposed action will resolve our concern regarding the use of the term "nearly resolved," which has been a misleading category in the GSI prioritization process. For example, GSI-190, "Fatigue Evaluation of Metal Components for 60-Year Plant Life," which was classified as "Nearly Resolved" in 1996, is yet to be resolved. Similarly, GSI-191, "Assessment of Debris Accumulation on PWR Sump Performance," was categorized as "Nearly Resolved" in 1996. In the document provided to us, the staff states that research will be initiated in FY 1998 to resolve this issue, which may take several years to complete.

Several of the 20 GSIs provided for our review were categorized as "Nearly Resolved." In SECY-98-166, however, these issues were arbitrarily recategorized as HIGH. The basis for these rankings should be documented.

Another category used in the prioritization process is "Resolved." We believe that there have been cases where this term is used too loosely. For example, the existence of a plan to resolve a particular GSI does not necessarily mean that the issue has been technically resolved. The staff should ensure that an adequate technical basis exists prior to declaring that a GSI has been resolved.

As part of a reevaluation of the GSI process, thought should be given to the appropriateness of using the classifications "Regulatory Impact Issue," "Licensing Issue," and "Environmental Issue" in the prioritization process. Irrespective of additional terminology applied to an issue, we believe that all issues should be prioritized as HIGH, MEDIUM, LOW, or DROP to provide consistency throughout the Agency. The emphasis by the Commission on reducing unnecessary regulatory burden to the industry supports the need for prioritizing the issues placed under the above three categories. Also, resolution of these issues should be clearly documented.

In our March 16, 1998 report, we noted that the planning by the Office of Nuclear Regulatory Research calls for the prioritization of two to three GSIs per year. In our April 12, 1988 report to the Commission, we stated that the average time required to assign a priority to a GSI is about six months, which we do not consider unreasonable. It is disturbing to see that the range of times involved in prioritizing GSIs varies widely. For example, GSI-163, "Multiple Steam Generator Tube Leakage," identified in 1992, was not prioritized until 1997, and GSI-169, "BWR MSIV Common Mode Failure Due to Loss of Accumulator Pressure," identified in 1993, was not prioritized until 1998. The staff should take efforts to ensure that GSIs are prioritized expeditiously.

The methodology used in the prioritization process is technically sound, but the staff should ensure the quality and appropriateness of the assumptions used in the analysis supporting the priority ranking of a particular GSI. For example, we recently reviewed the proposed resolution of GI-171, "ESF Failure From LOOP Subsequent to a LOCA," which was assigned HIGH priority ranking in 1995. Based on reassessment of the

assumptions and the frequency numbers used in calculating the core damage frequency (CDF), the CDF decreased by three orders of magnitude . This raises concern about the validity of the assumptions and analyses used in prioritizing other GSIs.

• Resolution

Fifteen of the GSIs identified since the 1979 amendment to the Energy Reorganization Act of 1974 have still not been resolved. We strongly urge continued effort to resolve these issues.

The staff has assumed that the safety concerns associated with several GSIs would be addressed by the licensees in the individual plant examination/individual plant examination for external events (IPE/IPEEE) programs. We recommend that after completing the review of the IPE/IPEEE submittals, the staff provide a report documenting whether the concerns of these GSIs were, in fact, addressed adequately so that they can be considered resolved. Those issues that were not adequately addressed should be prioritized and resolved.

• Coordination

The senior management of the Office of Nuclear Reactor Regulation and the Office of Nuclear Regulatory Research should ensure adequate coordination between their offices to resolve technical differences associated with GSIs in a timely manner to facilitate expeditious prioritization and resolution of GSIs.

Sincerely,



R. L. Seale
Chairman

Attachments: As stated

References:

1. Memorandum dated July 6, 1998, from L. Joseph Callan, Executive Director for Operations, NRC, for The Commissioners, Subject: SECY-98-166, "Summary of Activities Related to Generic Safety Issues."
2. Report dated March 16, 1998, to L. Joseph Callan, Executive Director for Operations, NRC, from R. L. Seale, Chairman, ACRS, Subject: SECY-98-001, Mechanism for Addressing Generic Safety Issues.
3. Report dated April 12, 1988, to the Honorable Lando W. Zech, Jr., Chairman, NRC, from W. Kerr, Chairman, ACRS, Subject: Effectiveness of Programs Relating to Generic and Unresolved Safety Issues - ACRS Comments.
4. Letters dated February 24, 1998, to The Honorable Albert Gore, Jr., President of the United States Senate, and The Honorable Newt Gingrich, Speaker of the United States

- House of Representatives, from R. L. Seale, Chairman, ACRS, transmitting "Nuclear Safety Research, A Report to the U.S. House of Representatives and the U.S. Senate."
5. Memorandum dated September 16, 1993, to James M. Taylor, Executive Director for Operations, NRC, from J. Ernest Wilkins, Jr., Chairman, ACRS, Subject: Proposed Priority Rankings of Generic Issues: Eighth Group.

TABLE A

TENTH GROUP OF GENERIC SAFETY ISSUES
REVIEWED BY THE ACRS DURING THE 455TH MEETING, SEPTEMBER 2-4, 1998

Generic Safety Issue Number	Title	Priority Ranking Proposed by the NRC Staff
163	Multiple Steam Generator Tube Leakage	HIGH
169	BWR MSIV Common-Mode Failure Due to Loss of Accumulator Pressure	DROP (Based on the impact/value ratio and the total risk reduction potential, this issue is in the drop category.)
170	Fuel Damage Criteria for High Burnup Fuel	HIGH (Current data cannot be correlated to design criteria and conclusive data will not be available for several years. Research is continuing on assessing the adequacy of fuel damage criteria at high burnups.)
172	Multiple System Responses Program	HIGH (Data are being collected to evaluate the manner in which the MSRP concerns were addressed by licensees in their IPE/IPEEE submittals. Staff assessment of licensee submittals will determine whether the concerns have been adequately addressed.)

Generic Safety Issue Number	Title	Priority Ranking Proposed by the NRC Staff
173 A	Spent Fuel Storage Pool for Operating Facilities	<p>HIGH (The staff is in the process of revising its guidance documents for spent fuel storage design (i.e., portions of SRP 9.1.3 and Regulatory Guide 1.13). Currently, the staff is working with industry (an ANS Subcommittee) to revise ANSI/ANS-57.2, the standard that contains guidance for spent fuel storage pool design. The staff plans to incorporate the improvements from this standard into a revised SRP and Regulatory Guide. The expected completion date for issuance of the revised guidance documents is August 2000.)</p>
173 B	Spent Fuel Storage Pool for Permanently Shutdown Facilities	<p>HIGH (Resolved) (No generic action was required.)</p>
174 A	Fastener Gaging Practices	<p>RESOLVED (This issue was resolved and no new requirements were established.)</p>
174 B	Johnson Gage Company Concern	<p>RESOLVED (This issue was resolved and no new requirements were established.)</p>
175	Nuclear Power Plant Shift Staffing	<p>RESOLVED (This issue was resolved and no new requirements were established.)</p>
176	Loss of Fill-Oil in Rosemount Transmitters	<p>RESOLVED (This issue was resolved and no new requirements were established.)</p>
177	Vehicle Intrusion at TMI	<p>RESOLVED (This issue was resolved and no new requirements were established.)</p>
178	Effect of Hurricane Andrew on Turkey Point	<p>RESOLVED</p>

Generic Safety Issue Number	Title	Priority Ranking Proposed by the NRC Staff
179	Core Performance	LICENSING ISSUE (Resolved) (This issue addresses the staff's efforts in clarifying existing requirements and guidance and, therefore, is classified as a Licensing Issue. This issue was resolved with the issuance of the revised staff guidance.)
180	Notice of Enforcement Discretion	RESOLVED (This issue was resolved with the issuance of the revised staff guidance.)
181	Fire Protection	LICENSING ISSUE (This issue addresses the staff's efforts in improving its capability to make independent assessments of safety and is classified as a Licensing Issue. NRR is in the process of completing pilot Fire Protection Functional Inspections.)
182	General Electric Extended Power Uprate	REGULATORY IMPACT ISSUE (This issue does not affect safety but could have an economic impact on the operation of plants with GE reactors. Therefore, it was classified as a Regulatory Impact Issue.)
183	Cycle-Specific Parameter Limits in Technical Specifications	RESOLVED
184	Endangered Species	ENVIRONMENTAL ISSUE (This issue addresses impact on the environment of nuclear plants and, therefore, is classified as an Environmental Issue.)

Generic Safety Issue Number	Title	Priority Ranking Proposed by the NRC Staff
190	Fatigue Evaluation of Metal Components for 60-Year Plant Life	HIGH (The staff is studying the risk of failure from fatigue of selected components. A report, "Fatigue Analysis of Components for 60-Year Plant Life" is under way, making use of updated fatigue design curves for stainless steel developed by Argonne National Laboratory in March 1998. This issue is expected to be resolved by March 1999.)
191	Assessment of Debris Accumulation on PWR Sump Performance	HIGH (Research is being planned on coatings and debris transport to determine the potential severity of PWR sump blockage effects. This work will be initiated in FY 1998 and may take several years to complete.)

ATTACHMENT 1

LIST OF GENERIC SAFETY ISSUES FOR WHICH
THE ACRS AGREES WITH THE
PRIORITY RANKINGS PROPOSED BY THE NRC STAFF

<u>Generic Safety Issue No.</u>	<u>Title</u>
163	Multiple Steam Generator Tube Leakage
169	BWR MSIV Common-Mode Failure Due to Loss of Accumulator Pressure
172	Multiple System Responses Program
<i>Issue 3</i>	Failure Modes of Digital Computer Control Systems
<i>Issue 4</i>	Specific Scenarios Not Considered in USI A-47
<i>Issue 5</i>	Effects of Degradation of HVAC Equipment on Control and Protection Systems
<i>Issue 6</i>	Failure Modes Resulting From Degraded Electric Power Sources
<i>Issue 7</i>	Failure Modes Resulting From Degraded Compressed Air Systems
<i>Issue 8</i>	Potential Effects of Untimely Component Operation
<i>Issue 9</i>	Propagation of Environments Associated With DBAs
<i>Issue 11</i>	Synergistic Effects of Harsh Environmental Conditions
<i>Issue 12</i>	Environmental Qualification of Seals, Gaskets, Packing, and Lubricating Fluids Associated With Mechanical Equipment
173 A	Spent Fuel Storage Pool for Operating Facilities
173 B	Spent Fuel Storage Pool for Permanently Shutdown Facilities
174 A	Fastener Gaging Practices - SONG's Employees' Concern
174 B	Fastener Gaging Practices - Johnson Gage Company Concern
176	Loss of Fill-Oil in Rosemount Transmitters

177	Vehicle Intrusion at TMI
178	Effect of Hurricane Andrew on Turkey Point
179	Core Performance
180	Notice of Enforcement Discretion
181	Fire Protection
182	General Electric Extended Power Uprate
184	Endangered Species
190	Fatigue Evaluation of Metal Components for 60-Year Plant Life
191	Assessment of Debris Accumulation on PWR Sump Performance

ATTACHMENT 2

LIST OF GENERIC SAFETY ISSUES FOR WHICH THE ACRS AGREES
WITH THE PRIORITY RANKINGS PROPOSED BY THE NRC STAFF,
BUT WITH COMMENTS

Generic Safety Issue No. : 170

Title : Fuel Damage Criteria for High Burnup Fuel

Priority Ranking HIGH
Proposed by the
NRC Staff :

ACRS Comments :

The research program that will technically resolve this issue is directed toward providing confirmatory evidence in support of regulatory decisions that have been made. The research program should ensure that adequate technical foundations and analytical tools are available to the NRC line organizations to meet regulatory needs. The research program needs to resolve criticisms leveled by NRC contractors concerning the adequacy of the treatment of delayed neutron fraction in neutron transport codes. The research program needs to document peer review arguments that criticality events will not occur if fuel is dispersed in fuel channels by credible reactivity insertion events. There must be confidence that local fuel damage does not propagate into large regions. The research program needs to ensure that Baker-Just clad oxidation kinetics used in Appendix K analyses are bounding for high-burnup fuel whose clad is susceptible to thermal stress fracture and breakaway oxidation. The research program also needs to develop plans to examine high burnup fuel behavior during anticipated transients without scram (ATWS) events and ATWS recovery processes.

Generic Safety Issue No.: 172

Title: Multiple System Responses Program

Priority Ranking HIGH
Proposed by the
NRC Staff:

ACRS Comments:

Of the 21 Multiple System Responses Program (MSRP) issues, 11 issues were to be addressed in the IPE/IPEEE programs. After reviewing the IPE/IPEEE submittals by the licensees, the staff plans to prepare a summary report on how these 11 issues were addressed in the IPE/IPEEE programs. In the summary report, the staff should document clearly whether these issues have been adequately addressed by the licensees in the IPE/IPEEE programs.

Those issues found to be not addressed properly should be reprioritized and resolved expeditiously. Subsequent to reviewing the staff's summary report, we will decide on the adequacy of the treatment of these 11 issues in the IPE/IPEEE programs.

Issue 10: Evaluation of Heat, Smoke, and Water Propagation Effects Resulting From Fires

This issue addresses the question about how effluents and heat generated during a fire might disperse from the site of the fire and affect equipment in other locations. The staff plans to address the effects of environmental stressors on digital electronic equipment, including the effects of smoke as a separate issue. We plan to review the proposed resolution of this issue.

Generic Safety Issue No: 175

Title: Nuclear Power Plant Shift Staffing

Priority Ranking RESOLVED

Proposed by the
NRC Staff:

ACRS Comments:

The staff should continue to monitor operating events and incidents to provide feedback regarding operational challenges and reassess the adequacy of staffing and task allocation, as appropriate.

Generic Safety Issue No : 183

Title : Cycle-Specific Parameter Limits in Technical Specifications

Priority Ranking RESOLVED

Proposed by the
NRC Staff :

ACRS Comments :

Performance by an individual licensee should not be used as the basis for closure of generic safety issues that are intended to reduce the regulatory burden on the nuclear industry. We recommend that the regulatory requirements identified by the Regulatory Review Group as being candidates for elimination be reconsidered under the generic safety issue process.

ATTACHMENT 3
GENERIC SAFETY ISSUE FOR WHICH
THE ACRS DISAGREES WITH THE PRIORITY
RANKING PROPOSED BY THE NRC STAFF

Generic Safety Issue No.: 172

Title: Multiple System Responses Program

Issue 16: Seismically Induced Fires

Priority Ranking DROP
Proposed by the
NRC Staff:

ACRS Comments:

Seismic events can cause fires and, at the same time, damage the capacity to suppress fires because fire suppression systems are not adequately qualified for seismic events. The staff acknowledges the existence of the issue and expects that it will be adequately addressed in the IPEEE process. At the same time, the staff has identified some 12 major issues with the industry-developed tool, Fire-Induced Vulnerability Evaluation (FIVE) Methodology, for analysis of fire and some 42 deficiencies of probabilistic risk assessment techniques for the analysis of fire. It would seem unlikely that even the most diligent licensee efforts to address the issue in its IPEEE program would yield persuasive results. It seems that the issue must remain open until we have a chance to review the findings of the IPEEE effort.

