

# **PLANT-SPECIFIC BACKFIT AUDIT REPORT**

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Attachment

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## EXECUTIVE SUMMARY

This plant-specific backfit audit was initiated by the Director of the former Office of Analysis and Evaluation of Operational Data in his role as Chairman of the Committee to Review Generic Requirements. The audit focused on power reactors and included visits to the regional offices, document reviews, and staff interviews. Industry comments and perceived shortcomings of the plant-specific backfit process raised during public meetings and congressional testimony in 1998 were also considered. Six issues provided by the Nuclear Energy Institute (NEI) were reviewed. NEI considered these issues as “prime examples” where the Nuclear Regulatory Commission had not followed the backfit rule.

Overall, the audit team found that the plant-specific backfit process has performed its intended function. The process has brought order, discipline, and predictability to agency activities. Plant-specific backfits were considered, in nearly all cases, to be properly justified and suitably defined. The auditors acknowledge the merit of the examples and concerns raised by NEI. However, given the vast number of interactions and communications with licensees, the very small number of backfit appeals, and the very small number of identified cases where agency backfit guidance may not have been fully implemented, the auditors conclude that the plant-specific backfit process is effective in performing its intended function.

Agency sensitivity to backfitting issues has heightened since mid-1998 as evidenced by ongoing revisions to procedures for license amendment reviews (e.g., NRR Office Letter 803/NRR Office Instruction LIC-101) and for managing plant-specific backfits (NRR Office Letter 901). Training to the staff on the backfit rule was completed in January 2001 for headquarter and regional employees. Computer-based self training on backfits is still available on the NRC internal web page. Also initiatives such as the implementation of the revised reactor oversight process, better communication with stakeholders, and the publication and use of guidance such as those contained in Regulatory Guide 1.174 to apply risk insights in making decisions on proposed changes to the licensing basis have improved the processes under which the NEI issues were raised. In addition, the staff has held numerous workshops with the industry over the last few years to improve the understanding of regulatory processes, and has encouraged the industry to comment on how the overall regulatory process could be improved.

## **ACKNOWLEDGMENTS**

The audit team expresses its appreciation to the Regional Backfit Coordinators for their assistance and cooperation in facilitating the regional office visits. The audit team appreciates the assistance and cooperation of the Nuclear Energy Institute and licensees who offered potential inappropriate backfit examples and provided details which made the task of identifying and retrieving relevant documents easier.

## ABBREVIATIONS

AEOD	Analysis and Evaluation of Operational Data, Office for (NRC)
ANSI	American National Standards Institute
AOT	allowed outage time
CCHE	control complex habitability envelope
CFR	Code of <i>Federal Regulations</i>
CRMP	configuration risk management program
EDG	emergency diesel generator
EOP	emergency operating procedure
EQ	environmental qualification
FSAR	Final Safety Analysis Report
GDC	general design criteria
GL	generic letter
IEB	Inspection and Enforcement Bulletin
IN	information notice
JCO	justification for continued operation
LAR	license amendment request
LLFA	letdown line failure accident
NEI	Nuclear Energy Institute
NPSH	net positive suction head
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation, Office of (NRC)
PM	project manager
RAI	request for additional information
RCP	reactor coolant pump
RCS	reactor coolant system
SAR	safety analysis report
SRP	Standard Review Plan
SGTR	steam generator tube rupture
TDAFWP	turbine-driven auxiliary feedwater pump
TIA	task interface agreement
TS	technical specification
TTA	three-tiered approach
USQ	unreviewed safety question

## **1 BACKGROUND AND DESCRIPTION OF THE AUDIT PROCESS**

This audit provides an assessment of the plant-specific backfit process. It supports the Nuclear Regulatory Commission's performance goals of: 1) maintaining safety; 2) increasing public confidence; 3) making NRC activities and decisions more effective, efficient, and realistic; and 4) reducing unnecessary regulatory burden.

This audit was initiated in October 1998 by the Director of the former Office of Analysis and Evaluation of Operational Data (AEOD) in his role as Chairman of the Committee to Review Generic Requirements (CRGR). It was, in part, initiated based on industry comments raised during public meetings and congressional testimony in 1998 on the perceived shortcomings of the plant-specific backfit process. In December of 1998, the Nuclear Energy Institute (NEI) provided several cases which were considered as "prime examples" where the NRC had not followed the backfit rule.

The auditors assessed the agency's implementation of the plant-specific backfitting process. This process is described in NUREG-1409, "Backfitting Guidelines," July 1990, and implemented by various office procedures or instructions. Please note that the agency's process is based on backfitting in the broad sense, rather than in the narrower, legalistic sense. As described in NUREG-1409, new generic positions in documents, such as generic letters, bulletins, and regulatory guides, as well as plant-specific positions, are to be considered and justified as backfits before they are issued; even though, as a legal matter, the backfit rule does not strictly apply until the point at which a backfit is required by, for example, a rule or an order.

The audit focused on power reactors and generally consisted of two tasks. The first task was similar to prior audits conducted by AEOD staff and involved visits to the regional offices, review of regional documentation including recent inspection reports, backfit logs, enforcement actions, procedures, and backfit appeals. These visits occurred between March and May of 1999. As part of the visits, inspection staff and managers were interviewed to assess their general knowledge of the backfit rule and its implementation. Findings from the regional office audits are documented in Section 2 of this report.

The second task in the audit consisted of analysis of example issues provided by NEI. Involved industry personnel and NRR staff were interviewed to learn their perspectives on these issues. The correspondence trail was retrieved to review the documented interactions between the staff and licensees, and to understand the history of the issue and the respective positions of the NRR staff and the licensees. NRR staff actions and activities associated with these issues were compared with backfit guidance in order to assess staff adherence to the backfit rule. A summary of the findings from the review of the NEI issues is documented in Section 3 of this report.

Interpretation of the written and interview records proved to be complex with several possible translations and points of views for many of the issues investigated. As a result, the audit writeup and findings were somewhat controversial and subject to much peer review. Thus, a draft of the audit report was not completed until November 2000. The CRGR was briefed at that time. In March 2001, this draft was issued to NRR for review and comment, with the request that NRR focus their review primarily on the accuracy and completeness of the

technical details. NRR's comments, received on May 14, 2001, were taken into consideration in this current revision of the audit report.

As outlined above, the audit and the writing of the audit report were stretched out over a period of approximately 3 years. Over this time period, the agency has changed many of its processes. For example, recent changes to the regulatory oversight process, and use of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," in making decisions on changes to the licensing basis have improved the processes under which the NEI issues were raised. As such, it is likely that this audit does not fully reflect the current agency plant-specific backfit process. NRC management sensitivity to backfit issues has increased significantly since 1998, when many of the comments were received. NRC management has heightened staff awareness and sensitivity to plant-specific backfit issues. Finally, as noted above, the issues audited in this report were often complex and evolving, therefore, it is unlikely that every perspective involved in reaching an agency position was appreciated by the auditors.

## **2 REGIONAL OFFICE AUDITS**

An audit team, consisting of typically two persons, visited each regional office. The Region III office was visited in March of 1999, the Regions I and II offices in April of 1999, and the Region IV office was visited in May 1999. Visits lasted approximately one and a half days during which the team reviewed a sample of regional documentation including recent inspection reports, backfit logs, recent enforcement actions, regional procedures, and backfit appeals. The team interviewed a cross-section of regional staff as well as licensee points-of-contact provided by NEI. Senior management in the regional offices were debriefed upon completion of the visit.

### **Findings and Observations from the Regional Office Audits**

The following are summary findings derived from the team's audit of the regional offices.

- A. Overall, the plant-specific backfit program was being implemented consistent with governing procedures by the regional offices.

The regions were effectively controlling backfit language in correspondence, the inspection staff was knowledgeable of plant-specific backfit guidance, and effective communications generally existed between working level inspectors and licensees. However, the auditors noted that, although NEI had highlighted concerns with the plant-specific backfit process, there was a reluctance on the part of some licensees to raise backfit issues. NRC management should continue to ensure and emphasize staff compliance with the plant-specific backfit process, and encourage licensees to communicate backfit concerns to the staff.

- B. Regional plant-specific backfit policies and procedures appeared appropriate.

At the time of the visits, regional policies and procedures appeared appropriate to implement the plant-specific backfit program.

- C. Regional inspection staff had a working knowledge of the Backfit Rule, although many inspectors had little or no recent training on the Backfit Rule.

Generally, the regional inspection staff had a good working knowledge of the plant-specific backfit process. Staff was generally aware of guidance documents and knew to ask their supervisor if any questions or uncertainties arose. Many inspectors, however, had little actual experience with the backfit process, and few had knowledge beyond the basic precepts of backfitting. Inspectors frequently relied on supervisors, managers, and inspection team leaders to ensure that a backfit was not inadvertently introduced when interacting with licensees or in written correspondence. The auditors noted that backfit training for headquarter and regional staff was recently completed in January 2001, and that training material is still available to NRC employees on the NRC's internal home page.

- D. Very few formal backfit appeals were filed.

The fact that there were few appeals suggests that backfits are being appropriately performed by the regions. However, NEI stated that some licensees were reluctant to file backfit appeals. Despite the lack of such appeals, NEI highlighted the issue to both the NRC and others (such as the Center for Strategic and International Studies which was conducting a high level review of the regulatory process for nuclear power reactors), because NEI believed the staff was not correctly implementing the NRC's backfit control process.

Due to the limited number of backfit appeals, and because inspectors propose very few plant-specific backfits, very few items were entered into the formal backfit process. As a result, the backfit database has been curtailed and was not funded in three of the four regional offices.

- E. Most inspection issues were resolved at the working level.

Inspectors and licensees usually came to an agreement regarding the plant's licensing basis. Subsequent enforcement or licensee corrective actions, if any, were usually based on compliance considerations rather than issuance of a backfit.

- F. The resolution process can be slow.

Issues not resolved initially at the working level generally led to an internal task interface agreement (TIA) to further review the issue. The TIA resolution process can be slow in reaching a conclusion, often leading to stakeholder frustration. The audit team notes that TIA timeliness has improved significantly since the audit began, and that the implementation of the risk-informed regulatory process can help to screen out non safety significant issues.

- G. Some improvements to the backfit process were proposed.

During the course of the interviews with the regional staff, a number of improvements were suggested by these staff members. Specific suggestions include: 1) more headquarters staff dedicated to TIA response to improve TIA timeliness, 2) minor changes to backfit procedures (an example given was that 3 weeks for initial response to backfit appeals was too short a time because of the complexity of some of the issues), 3) training on "real-life" backfit issues, and 4) reviewing contested enforcement actions from a backfit perspective.

These staff suggestions were discussed with regional management at exit briefings. As noted, TIA timeliness has improved. Actions on the other suggestions were taken, on a case-by-case basis, as determined by each Regional Office.

### **3 REVIEW OF NUCLEAR ENERGY INSTITUTE ISSUES**

A description of each NEI issue is provided in Appendices A through F. Appendix G discusses the NEI issues not evaluated. The appendices generally contain a brief background, synopses of the licensee's and the agency's position on major points of contention, and the auditor's judgement regarding backfit activities. Staff findings in the appendices were derived from the team's audit of the issues, including interviews of NRC staff and licensee points-of-contact provided by NEI. Again, it should be noted that these issues and findings predate many changes to the regulatory oversight process, and these changes limit the relevance of findings to today's regulatory environment. It was beyond the scope of this audit to evaluate whether these changes have fully resolved all audit findings.

A summary of the audit findings is provided below.

- A. Potential backfit concerns raised in the context of the NEI issues have either been resolved within the process itself, or have been addressed by changes to the regulatory process.

NEI raised issues that suggested the need for regulatory improvements in order to avoid misapplication of the backfit process. The audit found that two of the six issues reviewed did not involve a backfit. The other four issues involved "gray" areas which could have been viewed as potential backfits depending on the interpretation of the guidance and the point-of-view of the participants. In most cases these issues could have been resolved with better and more effective communication with the licensees. It is noted that, since 1998, office procedures have been revised to direct the staff to engage the licensees early and frequently to help in the resolution of potential problems. In addition, the types of concerns raised in the NEI issues have, in the most part, been addressed by changes to the regulatory process since the audit was begun. The main improvement is the transition to a more risk-informed regulatory process including a revised reactor oversight process. These processes have enhanced consistency in staff implementation of the regulations and have focused staff attention in areas of safety significance.

- B. Regional plant-specific backfit policies and procedures found appropriate.

Questions had been raised within the context of the NEI issues, regarding the adequacy of regional plant-specific backfit policies and procedures. Audit findings indicated that regional policies and procedures were appropriate for implementation of the plant-specific backfit program.

- C. Lack of timeliness and responsiveness led to many of the NEI issues.

The audit revealed communication shortcomings in articulating to licensees the licensing or legal bases of "requirements" (especially when the requirements are in the process of being disputed). In the past and before the current processes to be more responsive to external

stakeholders were established, NRC was sometimes slow to respond to licensees, and licensee responses to NRC's requests for information were sometimes technically incomplete or slow. The auditors acknowledge that TIA timeliness has improved since the audit was initiated, as a result of both industry and NRC efforts (e.g., better procedures, tracking of TIAs, etc.). The audit team also acknowledges that NRC has initiatives in progress that will improve communications, through the use of risk information where appropriate, to characterize and prioritize agency actions. The auditors note that timely and effective communications is an area that will need continuing attention.

- D. Incomplete communication regarding NRC positions involving similar design-bases or licensing-bases issues at multiple facilities gave the mis-perception that the generic backfit process had been circumvented.

Three of the NEI issues reviewed in detail involved similar issues at multiple facilities. The use of similar licensing actions at multiple plants can give the perception that the generic backfit process is being circumvented, however, the audit did not find that the process had in fact, been circumvented. Improved communications with licensees should preclude mis-perceptions associated with the application of the backfit process.

- E. Several instances were identified where agency correspondence, programs, or guidance were either not current or inconsistent with previous correspondence or other programs and guidance.

Examples from the audit include: (1) NUREG-1409, did not reflect the current NRC organization and responsibilities; (2) an inspection procedure for reviewing licensee 10 CFR 50.59, "Changes, Tests, and Experiments" programs was inconsistent with the regulation and contributed to one of the NEI issues; and (3) in correspondence related to the issues raised by NEI, there were several instances where staff either reversed a previous position or stated an inconsistent or incorrect position. The auditors acknowledge that the staff has plans to update NUREG-1409.

The burden is on the NRC staff to ensure correspondence, programs, and guidance are updated and consistent. Within this framework, the Strategic Plan's performance goal to make NRC activities and decisions more effective, efficient, and realistic should improve the consistency and predictability of the regulatory process. Implementation of risk-informed and performance-based approaches should result in improved internal processes and bases for decision-making.

- F. One of the NEI issues involved a case where NRC had not been aware of an industry group (Institute of Nuclear Power Operation's National Academy for Nuclear Training) changing guidelines integral to NRC acceptance of certain aspects of licensee training programs. Some licensees interpreted these changes as NRC approval and modified their training programs.

Action has been taken to help ensure that guidelines integral to NRC acceptance or acceptability are not changed without prior NRC knowledge or approval. Licensee initiatives to better manage NRC commitments and expectations should also help to resolve this issue.

#### 4 OVERALL AUDIT RESULTS AND RECOMMENDATIONS

- A. Overall, the plant-specific backfitting process has performed its intended function. The process has brought order, discipline, and predictability to agency activities. Plant-specific backfits were considered, in nearly all cases, to be properly justified and suitably defined. The auditors acknowledge the merit of the examples and concerns raised by NEI. However, given the vast number of interactions and communications with licensees, the very small number of backfit appeals, and the very small number of identified cases where agency backfit guidance may not have been fully implemented, the auditors conclude that the plant-specific backfit process is effective in performing its intended function. Nevertheless, the auditors suggest that the NRC should continue to seek out opportunities for improvement, especially in the area of communication.
- B. Agency sensitivity to backfitting issues has heightened since mid-1998 as evidenced by ongoing revisions to procedures for license amendment reviews (e.g., NRR Office Letter 803/NRR Office Instruction LIC-101) and for managing plant-specific backfits (NRR Office Letter 901). Training to the staff on the backfit rule was completed in January 2001 for headquarter and regional employees. Computer-based self training on backfits is still available on the NRC internal web page. Also initiatives such as the implementation of the revised reactor oversight process and the publication and use of guidance such as those contained in Regulatory Guide 1.174 to apply risk insights in making decisions on proposed changes to the licensing basis have improved the processes under which the NEI issues were raised. In addition, the staff has held numerous workshops with the industry over the last few years to improve the understanding of regulatory processes, and has encouraged the industry to comment on how the overall regulatory process could be improved.
- C. This audit and its review of selected issues revealed opportunities for strengthening the plant-specific backfit process and related communications and interactions with licensees. The auditors note that timely and effective communications is an area that will need continuing attention. In addition, NRC management should continue to ensure and emphasize staff compliance with the plant-specific backfit process, and encourage licensees to communicate backfit concerns to the staff.

**APPENDIX A**  
**Nuclear Energy Institute Issue –**  
**Credit of Containment Overpressure**  
**in Calculations for Emergency Core Cooling**  
**System Net Positive Suction Head**

**Position Descriptions**

The licensee's position is that its license predates Regulatory Guide 1.1, "Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal System Pumps (Safety Guide 1)" (Ref. 1), and that no restriction on the use (or crediting) of containment overpressure in calculations existed prior to its publication. The licensee asserted that the staff did not identify backfit implications for older plants during preparation of Generic Letter (GL) 97-04, "Assurance of Sufficient Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal Pumps," October 7, 1997. Finally, the licensee noted that the staff closed out its response to GL 97-04 without responding to statements preserving its ability to credit containment overpressure in future emergency core cooling system calculation and analyses, if permissible under 10 CFR 50.59, without prior notification to the NRC.

In reply to the licensee's initial response to GL 97-04, the NRC staff stated that "whether or not a licensee is committed to Regulatory Guide 1.1, NRC staff review and approval should be obtained before a licensee can credit containment overpressure in their NPSH [net positive suction head] calculations" (Ref. 2). Based on interviews with the Office of Nuclear Reactor Regulation's (NRR) technical staff, it was the NRC's view this was not a backfit because this was not a new staff position. NRR technical staff interviewed believed that this position was established in Safety Guide 1 in November 1970, prior to the backfit rule (and perhaps as early as 1968). Technical staff interviewed stated that it is important for NRC to control the net positive suction head (NPSH) margin through the review and approval process because the risk significance of emergency core cooling system pumps is high and licensees made non-conservative errors in the calculations. Note that the examples provided in the GL support this view.

Staff interviewed agreed with the licensee that the backfitting contention was not addressed in the GL 97-04 closeout letter (Ref. 3). The staff stated that it was not necessary for this claim to be addressed or resolved during GL 97-04 closure because the licensee had not yet attempted to credit containment overpressure. NRR's view indicated that the staff had provided guidance to the licensees regarding NRR expectations should licensees in the future decide to take credit for containment backpressure in NPSH calculations.

**Audit Observations and Results**

The fundamental issue in this example is whether a binding regulatory staff position had previously been established for this licensee regarding adherence to Regulatory Guide 1.1. The licensee stated that it is not committed to Regulatory Guide 1.1, which was issued after the plant was licensed. Therefore, attempting to impose Regulatory Guide 1.1 on this plant is contrary to current backfit guidance, in that, a modification to the procedure for design approval was involved and it appears that this was a change in the applicable regulatory staff position. In

this case, the staff actions apparently contrary to the backfit guidance appear to have had little actual impact or regulatory burden since the licensee has not made changes where this restriction would have come into effect. Further, Regulatory Guide 1.1 only states that emergency core cooling and containment heat removal pumps should be designed to have adequate NPSH without crediting containment overpressure.

While the generic backfit process was beyond the scope of this audit, it is interesting to note the staff practice with respect to this issue. During the comment phase on draft GL 97-04, NRC received comments from industry cautioning about backfitting general design criteria (GDC) and the Standard Review Plan (SRP) to older plants which were licensed prior to the issuance of GDC and SRP, without appropriate backfit analyses (Ref. 4). As a result, the final GL was revised so that it did not reference or discuss the GDC or SRP as requirements. Thus, it appears that the public comments were considered in order to prevent a backfit issue.

GL 97-04 was issued as an information request, and hence was not a backfit. The GL discussed staff positions related to Regulatory Guide 1.1, the GDC, and the SRP but was silent as to whether these positions were applicable to any or all licensees. Later, by quoting and referring to these various guidance documents, it appears that staff might be attempting to convince licensees that NRC controlled the NPSH margin, and that no credit could be taken for containment overpressure without NRC review and approval. Although it gave the appearance that the staff was attempting to side-step some of the issues raised by the industry comments, and that the positions stated in GL 97-04 were being used as the basis for treating Regulatory Guide 1.1 as a regulatory requirement, GL 97-04 was issued as an information request and did not require a backfit analysis.

**APPENDIX B**  
**Nuclear Energy Institute Issue –**  
**Plant Staff Qualification Issue**

**Background**

In a September 3, 1998, request for additional information (RAI) (Ref. 5), NRC staff asked for a description of how a commitment to an American National Standards Institute (ANSI) standard other than the one endorsed by NRC, met the requirements of the revised (in 1987) 10 CFR 55, as discussed in the statements of consideration for the rule change. The staff apparently needed this information because of staff concerns that several facilities had technical specifications (TS) that reference industry standards that might not fully meet the revised requirements of 10 CFR 55. The staff at the time was drafting an information notice (IN) regarding this issue (as described below), and the staff felt that the licensing action being reviewed could have been directly affected by the licensee's understanding of the issue.

In the RAI, staff stated that Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," Rev. 2, describes methods acceptable to the staff for complying with requirements of the revised 10 CFR 55, and that Regulatory Guide 1.8, Rev. 2, stated that ANSI standard N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel" provided an acceptable approach except for the positions of shift supervisor, senior operator, licensed operator, shift technical advisor, and radiation protection manager. Note that this licensee's TS referenced ANSI N18.1-1971 for plant personnel, except for the Radiological Manager, whose qualifications were referenced to Regulatory Guide 1.8, Rev. 1. The staff previously considered that the standards applied through the industry's accreditation process were equivalent to the guidance contained in Regulatory Guide 1.8, Rev. 2, but now no longer considered them equivalent. IN 98-37, "Eligibility of Operator Licensee Applicants" issued on October 1, 1998, provided an explanation. Per the IN, in 1991 the National Academy for Nuclear Training modified its accredited licensed operator training program guidelines by removing certain criteria integral to the NRC's endorsement of that accreditation as an acceptable means of meeting the requirements in 10 CFR 55. Per the IN, some facilities interpreted the removal of these criteria from the industry guidelines as NRC approval to reduce the training and experience requirements for operator license applicants and modified their training programs and procedures accordingly. The National Academy for Nuclear Training issued interim guidance on July 8, 1998, which reinstated the industry guidance that was removed in 1991.

**Position Descriptions**

The licensee stated several positions in response to the RAI (Ref. 6). This audit focused on two positions. First, the licensee recognized the need to comply with 10 CFR 55, and that the procedures, processes and programs (including Institute of Nuclear Power Operations accredited training programs) in place satisfied the rule. The licensee cited a January 1998 inspection report (Ref. 7) wherein NRC had concluded that the licensee was in compliance with 10 CFR 55. The licensee also discussed a license amendment issued and approved in September 1997 (Ref. 8) wherein the staff allowed the removal of items from the Administrative Controls Section of the TS. In the safety evaluation report for the Amendment, NRC stated that "the regulatory requirements in 10 CFR 50.54 and 55, provide sufficient controls for the training

provisions and removing them from the TS is acceptable.” The licensee noted that this Amendment removed specific references to ANSI N18.1-1971 as related to training and qualification of licensed operators and senior operators.

Second, the licensee expressed a concern that NRC had circumvented the controls built into the backfit process which ensures that a change in staff position is adequately evaluated prior to its implementation. The licensee noted that similar RAIs had been issued on several dockets. The licensee believed this issue had generic implications and that it should have been handled through the NRC’s generic issues and backfit processes, rather than through individual licensing actions.

In response to the licensee’s positions, the staff stated that the RAI was issued to (1) ensure the mutual understanding of this issue, (2) confirm compliance with 10 CFR 55, and (3) ensure the licensee was aware of the opportunity to update the aforementioned commitments in an efficient manner through revision of the improved TSs conversion submittal if needed. Staff stated that “such a change to your current submittal regarding this issue is not an NRC requirement and will not affect timely issuance” of the amendment to convert to improved TSs. NRC believed that the staff position on the staffing issue was not a new or different position from a previously applicable staff position. Further, the staff stated that the RAI did not impose, nor was it intended to imply the need for, a backfit. Staff stated that similar requests were sent to other licensees in the process of converting their TS, and that IN 98-37 was the primary method NRC used to inform licensees of this issue.

### **Audit Observations and Results**

The audit team finds that the September 3, 1998, RAI letter was not a backfit but a request for additional information.

The NRC had previously inspected the licensee several times and concluded that the plant was in compliance with the revised 10 CFR 55. However, in this case, there appears to have been confusion in industry and by ANSI with regard to what the NRC relied upon when the NRC endorsed the ANSI standard as a method for compliance with the regulations. This confusion led to modifications to the ANSI standard which made the standard unacceptable for compliance with the regulations.

The staff found it necessary to issue an IN to address the above confusion. As discussed in the IN, the heart of the issue leading to the RAIs was that the National Academy for Nuclear Training modified its accredited licensed operator training program guidelines in 1991 by removing certain criteria integral to the NRC’s endorsement of the accreditation as an acceptable means of meeting the requirements in 10 CFR 55. As noted in the IN, some licensees interpreted the removal of these criteria from the industry guidelines as NRC approval to reduce the training and experience requirements for operator license candidates and modified their training programs and procedures accordingly.

Communication with licensees early in the license amendment process, especially in areas of confusion, is appropriate. This issue became one of timing. It should be noted that current guidance provided in NRR Office instruction LIC-101 “License Amendment Review Procedures”

calls for staff to engage early regarding licensing actions so that potential problems could be discussed at this stage.

**APPENDIX C**  
**Nuclear Energy Institute Issue –**  
**10 CFR 50.59, "Changes, Tests and Experiments"**  
**Violations Related to "Trivial Changes"**

**Background**

A licensee was issued a Severity Level IV violation for four examples of implementing a design change notice without performing a written evaluation providing the basis for concluding that the change did not involve an unreviewed safety question (USQ). Each example involved a change to the drawings contained in the safety analysis report (SAR). Although considered violations at the time, it should be noted that the regulation 10 CFR 50.59 was in the process of being revised to enhance its clarity and flexibility in response to stakeholder concerns.

**Position Descriptions**

In reply to the violation (Ref. 9), the licensee stated that the staff had modified its position on a previously accepted licensee procedure, and so the violation constituted a backfit. The licensee believed the staff had changed its position because the licensee's program had previously been inspected and reviewed several times and found acceptable. In addition, the licensee referred to a specific inspection report (1993) as providing prior NRC approval of a process that utilized a "trivial change" screening criteria. The licensee referenced NRC inspection guidance (Ref. 10) as providing regulatory support for its "trivial" screening criteria. Reference 10 states "It should be noted that the SARs for a number of older facilities contain floor plans of onsite buildings that may include trivial detail such as the locating [sic] of dividing walls between various offices. From a rigid reading of 10 CFR 50.59, it is possible to infer that the removal of a dividing wall between two offices constitutes a change from the facility described in the SAR, and therefore requires a safety evaluation. However, the intent of 10 CFR 50.59 is to limit the requirements for written safety evaluations to facility changes, tests, and experiments which could impact the safety of operations."

The licensee provided copies of their request for backfit analysis letter to the Regional Administrator and Executive Director of Operations. The licensee expressed the understanding that further action on this matter would be held in abeyance until the backfit analysis was completed. The licensee also expressed concern that if their criteria for "trivial" changes were incorrect, licensee resources would be diverted into reviewing prior "trivial" changes, with little safety benefit but substantial costs.

The staff's initial views on this issue are detailed on pages 19-23 of Inspection Report 50-445 and 50-446/97-12 (Ref. 11). Inspectors, after consultation with NRR, concluded that two categories of the licensee's definition of "trivial changes" allowed changes which were potentially beyond the scope of "trivial changes" as discussed in Reference 10 (NRC inspection guidance). The NRC scope of "trivial changes" included editorial, organizational, and typographical changes, but did not extend to physical changes to the plant configuration that resulted in a revision to plant drawings included in the Final Safety Analysis Report (FSAR).

The inspectors noted that NRC acceptance of a position is not conferred by the lack of a reference to an issue within a report. As such, licensees should not conclude that undocumented elements of a reviewed program have been accepted by the NRC. The staff disagreed with the licensee's exit meeting assertion that the 1993 inspection report constituted review and approval of the licensee's definition of "trivial" changes. The inspectors noted that the 1993 inspection report only documented that a safety evaluation had not been performed for a temporary modification which involved a clear change to the facility as described in the licensing basis documents, and that the change should have been implemented as a "trivial" type change because the change had no potential safety impact. The inspectors (in 1993) were concerned about the need to carefully follow administrative procedures. In Reference 11, the staff concluded that inspector views and concerns in the prior inspection report could not reasonably be construed to be NRC approval of the licensee's program for use of "trivial" changes.

The NRC project manager (PM) for this licensee was interviewed on March 24, 1999. The PM stated that a response to the licensee's July 11, 1997, letter had not yet been issued and that a TIA had been requested by Region IV in September 1997. The PM noted that, in this case, the Inspection Procedure guidance (on implementation of 10 CFR 50.59) dates back to 1984 and believes it should have been superceded when interim guidance for 10 CFR 50.59 reviews was issued in 1996.

On March 27, 2000, NRC Region IV responded to the licensee's backfit claim (Ref. 12). NRC Region IV acknowledged that the 1993 inspection report provided statements that appeared to accept the licensee's guidance on this matter. As such, NRC reversal of this previous position constituted a change in staff position which constituted a compliance backfit. The NRC exercised enforcement discretion under Section VII.B.6 of the Enforcement Policy.

### **Audit Observations and Results**

The audit team agrees with the position articulated in Reference 12 that this issue is a compliance backfit.

This example illustrates the challenge presented to the staff in complying with the backfit rule. All licensees have unique design and licensing bases; and the agency has many rules with varying degrees of complexity, standards incorporated by reference, many guidance documents interpreting the rules, and has issued many documents such as inspection reports or safety evaluation reports which may have approved or endorsed licensee programs or practices. This legacy of existing correspondence and documentation presents a formidable challenge in complying with the Backfit Rule.

In this case, both the licensee and staff appear to agree that the issues had low safety significance. The licensee stated in Reference 9 that "not a single screen will result in a USQ, since none had the potential to impact safety. There will be no safety benefit and [licensee] resources will be drawn away from potentially more safety significant matters." The NRC's Executive Director for Operations has stated that "if 10 CFR 50.59 were not properly implemented by licensees the possibility could exist that a small but cumulative impact on safety would occur" (Ref. 13).

In this example, the inspection manual section providing guidance to inspectors on the backfit rule (Ref. 14) was issued in 1982, prior to the last substantial revision to the backfit rule. It was not up-to-date as illustrated below. The inspection manual section discussed “substantial, additional protection” backfits. It did not discuss any of the three types of backfits currently recognized by the rule, (i.e., compliance backfits, adequate protection backfits, or cost-justified substantial safety enhancement backfits). The inspection manual section also stated that backfitting only pertains to the hardware related aspects of structures, systems and components and does not impact regulatory authority to affect changes to procedures, staffing, and training. NUREG-1409 and 10 CFR 50.109 define a backfit as a modification of, or addition to, plant systems, structures, components, procedures, organization, design approval, or manufacturing license that may result from the imposition of a new or amended rule or regulatory staff position that became effective after specific dates.

A lessons-learned from this issue is that the staff should try to ensure that in inspection reports, the findings do not implicitly or explicitly attempt to validate, or otherwise approve the acceptability of a licensee’s particular approach (see NUREG-1409, pg. 15), especially in the closure of issues or event followup. The Revised Reactor Oversight Process (ROP) would help in this respect. As part of the ROP, Manual Chapter 0610 Inspection Reports was revised to establish minimum threshold criteria for documenting findings in inspection reports. The focus is for inspectors to compare findings to these criteria prior to documenting an issue in an inspection report. Therefore the focus is on whether the issue has an impact on safety or is a precursor to a more significant event and less on the licensee processes and approaches.

A second lessons-learned is that there should be a more integrated process to oversee change processes (reorganizations, program changes, revised regulations and guidance) so that when new or changed programs are implemented, other affected programs (and their documentation) will be identified and revised to be current and consistent.

**APPENDIX D**  
**Nuclear Energy Institute Issue –**  
**Extension of Allowed Outage Time**  
**for Emergency Diesel Generators**

**Background**

In November 1995, the licensee proposed a TS amendment to extend the emergency diesel generator (EDG) allowed outage time (AOT) from 3 to 7 days (Ref. 15). The licensee considered the request to be a Cost Beneficial Licensing Action which would result in an estimated savings of \$27 million over the life of the plant by allowing more on-line EDG maintenance and inspection. During the review process, staff began treating this request as a risk-informed TS amendment. The requested licensing action was completed by issuance of a TS amendment on June 2, 1998, about 2 1/2 years after the original request (Ref. 16). A similar request, made shortly before this request, was processed in about 8 months.

**Position Descriptions**

The licensee's basic concern was that a pilot program for risk-informed TS AOT changes was applied, such that higher standards were being imposed for approval of the amendment. The licensee had not volunteered to participate in the pilot effort. In a December 23, 1997, RAI (Ref. 17), NRC staff stated that "one of the elements **required** [emphasis added] to support risk-informed TS AOT extensions is the implementation of a CRMP [configuration risk management program]." The RAI requested the licensee to submit a proposed change adding a CRMP description to the TS administrative control section and supply supporting information about the CRMP program. This addition was characterized by the licensee as a "quid pro quo" in exchange for granting the AOT extension. The licensee had similar concerns regarding a March 22, 1996, RAI (Ref. 18), which stated staff expectations regarding use of a "three-tiered approach (TTA)" in proposing risk-based TS amendments. CRMP is the third tier of the TTA.

**Audit Observations and Results**

The backfit aspects of this issue are complex. This licensing action was a request for a *relaxation* (i.e., an increase in EDG AOT). The backfit rule generally does not apply to relaxations (NUREG-1409, page 2) or voluntary, licensee proposed actions. On the other hand, NRC stated in Reference 17 that "one of the elements required to support risk-informed TS allowed outage time extensions is the implementation of a CRMP....description of the CRMP must be added to the....TS." As noted in Reference 18, the purpose of the CRMP is to assure that "the licensee performs a thorough assessment of the overall impact on safety-related functions of related TS activities, as required by the maintenance rule (10 CFR 50.65). This should be an intrinsic part of all maintenance scheduling."

The Reference 18 request that a thorough assessment of the overall impact on safety functions of related TS activities be performed as "required" by the maintenance rule can appear to be an unrecognized backfit, in that, it is a revised regulatory staff position in the direction of increased safety requirements beyond the actual or existing regulation. It could be argued that, at that time, the maintenance rule was not yet in effect, and the rule itself would not require an

assessment of the overall impact of maintenance activities on safety functions – but rather stated that such assessments “should” be done. However, it is noted that the difference in timing is less than 4 months (Reference 18 was dated March 22, 1996 and the maintenance rule was required to be implemented by licensees no later than July 10, 1996) and that the rule had already been published. The use of “should” versus “shall” in the maintenance rule was a subject of varied interpretation and much debate. The staff has subsequently pursued rulemaking so that an assessment of the total plant equipment that is out of service is taken into account to determine the overall effect on performance of safety functions.

In an April 30, 1997 Commission Paper (SECY-97-095) it was stated that a CRMP was required for risk-informed TS AOT extensions. This SECY appears to be specific to a pilot program AOT extension for Arkansas Unit 2, and it was unclear whether it also applied to other plants. However, the SECY was viewed by the staff as informing the Commission that CRMP would be an important part in the approval and justification of other AOT extensions. It is noted that guidance provided in “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications,” published in DG-1065 (June 1997) and Regulatory Guide 1.177 (August 1998), required the CRMP for risk-informed TS AOT extensions for the more risk significant systems or components.

The auditors conclude that, because this issue involved a voluntary licensing action, the normal backfit rules do not apply. However, some of the staff requests in the written correspondence to the licensee appear to have gone beyond the existing requirements at that time, and therefore, this could appear to be an unrecognized backfit. This is a gray area. This issue is ultimately an issue of timing. This plant-specific licensing action was impacted by rulemaking as well as development of regulatory guidance documents on the same subject that was ongoing at the same time. The schedule for the licensing action was stretched out because technical issues had to be resolved and it appeared that the staff wanted consistency in the treatments provided in the maintenance rule, the Regulatory Guide for risk-informed TS amendments, the TS pilot plant applications and the ongoing licensing actions.

**APPENDIX E**  
**Nuclear Energy Institute Issue –**  
**Control Room Heating, Ventilation,**  
**and Air Conditioning**

**Background**

Several inter-related design bases issues at a licensee involved control room heating, ventilation, and air conditioning. At issue were questions regarding acceptable analytical methods and assumptions and acceptance criteria (i.e., the governing, license bases requirements which this licensee must meet). This licensee was in an extended shutdown in 1997 and was attempting to resolve open issues so that the unit could be restarted. The inter-related issues involved emergency operating procedures (EOPs), and the analyses for letdown line failure accident (LLFA), steam generator tube rupture (SGTR), and Control Complex Habitability Envelope (CCHE).

The licensee had several broad concerns regarding the manner in which these issues were handled. The licensee was on the NRC “Watch List” and was nearing startup from an extending outage when the control room habitability issues arose.

The focus of concern was the perceived attempt to apply regulatory standards, such as GDC-19 and SRP 6.4, beyond existing plant design and licensing bases. An example given was the consideration of single failure and LOOP for the SGTR analysis.

The licensee stated that staff went beyond licensing basis in the consideration of iodine spiking (assumed reactor coolant system [RCS] specific activity) in dose calculations (Ref. 19), (Ref. 20). Overall, the licensee claimed that the staff requested beyond licensing bases analyses, and that these analyses and interim compensatory measures were agreed to while the licensee was under pressure (economic and other) to restart the unit. In handling of the CCHE issues, the licensee felt that staff compelled testing or calculations not required by the SAR following hardware changes.

**1. Letdown Line Failure Accident – Background**

One issue involved license amendment request (LAR) 218 for a revision to an analysis for the LLFA (Ref. 21). In the original analysis, the event was modeled as being terminated by an automatic isolation. The revised analysis modeled the event as being terminated by a manual isolation. The licensee had initially performed this change in April 1996 under 10 CFR 50.59, but later concluded that the change involved a USQ requiring NRC approval, based on the replacement of the automatic isolation with the manual isolation, and the increase in radiological dose calculated (the 2-hour dose at the Exclusion Area Boundary tripled compared to the previous analysis). The need for an analysis change arose when the licensee identified that an EOP specified action (ensuring full high-pressure injection flow upon a loss of subcooling margin) could prevent a decrease to the low RCS pressure engineered safeguards actuation system setpoint for automatic isolation of the letdown line, which, in effect, invalidated the prior analysis. The licensee and the staff were not in accord with regard to assumptions, such as whether the assumed RCS activity was to include iodine spiking, to be used in the revised analysis.

## **Letdown Line Failure Accident – Resolution**

On February 22, 1999 (Ref. 22), the staff retracted its rejection of LAR 218 (concerning the LLFA). In the memo, the staff acknowledged that its prior rejection had not been forwarded to the licensee. The staff accepted the licensee's conclusion that the assumption of iodine spiking ( $60\mu\text{Ci/gm}$  dose equivalent Iodine-131) was not consistent with the licensing basis for the letdown line break based on the language in the TS bases. The staff performed independent calculations assuming an RCS activity of  $60\mu\text{Ci/gm}$  dose equivalent Iodine-131. The results showed that doses would be less than a small fraction of 10 CFR 100. The staff concluded that there was reasonable assurance of adequate protection of the public for this event. Thus, backfitting criteria had not been met for changes to the licensee's FSAR or TSs.

## **Letdown Line Failure Accident Analysis – Audit Results**

On February 22, 1999, NRC staff accepted (internally) the licensee's conclusion that the assumption of iodine spiking was not consistent with the licensing basis for the letdown line break based on the language in the TS bases. This acceptance occurred 15 months after the licensee provided its position in writing to the NRC. The protracted efforts to make the licensee either justify or adopt a beyond design and licensing analytical assumption appears to be an inappropriate unrecognized backfit. Indeed, NRR had earlier internally rejected LAR 218 because the submittal was deficient even after the licensee provided additional information regarding the iodine spiking assumption (Ref. 23). Further, in Reference 23, NRR acknowledged that "with the exception of the reactor coolant activity assumption, the licensee's analysis assumptions are acceptable," and that confirmatory analysis indicated that offsite doses would be acceptable even with the assumption of iodine spiking.

The definition of a backfit includes the modification of or addition to the design or design approval of a facility which may result from the imposition of a regulatory staff position that is either new or different from a previously applicable regulatory staff position. The backfit rule does not apply to requested actions that are optional or voluntary. However, in this case the licensee's action was not voluntary. The licensee was attempting to correct the plant's design basis and FSAR as required by regulations. When the licensee identified that correcting this error in its design bases would involve an unresolved safety question (replacement of a manual isolation with an automatic isolation), under 10 CFR 50.59 at that time, the licensee was required to obtain NRC review and approval under 10 CFR 50.90 prior to making the change.

Ultimately, this also became an issue of timeliness and communication. It can be argued that too much time and effort were spent on analyses and assumptions supporting a LAR even though the results were known to be acceptable. However, NRR staff had felt that they could not ignore deficiencies in the licensee's analyses (even though staff analyses showed acceptable results) because current NRC policy requires technical reviewers to approve license amendments based on licensees' analyses and since these analyses will become the licensing basis and could subsequently be used in future 10 CFR 50.59 evaluations. Nonetheless, the audit team concludes that the situation can, in large part, be avoided by better use of risk information (the issue was known to be of low significance), and by timelier decision-making and communication with the licensee so that the differing positions are better known and understood by all parties to facilitate quicker resolutions.

## **2. Control Complex Habitability Envelope – Background**

Another issue involved System Readiness Reviews conducted by the licensee in 1997 which identified several issues which could potentially impact control room habitability (Ref. 24). A number of actions were undertaken to address these concerns. The actions significantly improved the level of protection provided for the control room operator. These included 1) modifications to reduce CCHE inleakage by improving the integrity of boundary elements, 2) Control Room Emergency Ventilation System design changes to provide alternate means of mechanical equipment room ventilation, and to improve system reliability, and 3) programmatic changes to ensure that the assigned efficiency of the control complex filters is consistent with regulatory guidance.

The modifications and design changes discussed above called for revision of the control room operator dose calculations so that analytical inputs and assumptions would be consistent with the plant design. The licensee stated that the basic methodology employed in these revised calculations was consistent with that found in regulatory guidance and used in previous calculations. However, the determination of CCHE inleakage and the application of inleakage in dose calculations differed significantly from prior methodology. The licensee determined that these differences constituted an unresolved safety question. Because the expected time for review and approval of a license amendment would not support the unit restart schedule, the licensee prepared a justification for continued operation (JCO) to address the safety significance of this USQ and ascertain the acceptability of interim restart. The licensee provided a copy of the JCO (Revision 3) to the NRC on December 15, 1997, in response to a verbal RAI. The licensee concluded that operability of the CCHE and control room emergency ventilation system has been demonstrated and documented. A detailed analysis of the SGTR was performed and the maximum hypothetical accident remained the bounding event with regard to control room habitability.

### **Control Complex Habitability Envelope – Resolution**

On January 8, 1998, the NRC and licensee met concerning the CCHE. By letter the licensee confirmed the meeting discussions and provided a list of commitments (Ref. 25). At the meeting, NRC accepted the licensee's methodology for the evaluation of control room doses of the maximum hypothetical accident, subject to completion of a detailed review. The NRC also accepted the licensee's JCO for power operation for the current cycle, subject to completion of a detailed review and the implementation of compensatory measures. The required compensatory measures were to administer potassium iodide to control room operators in accordance with plant emergency response implementing procedures (without this commitment, the control room doses from a LLFA would be unacceptable).

The staff did not, however, consider the use of potassium iodide a suitable permanent replacement for appropriate engineering features, thus the licensee also agreed to perform and submit additional control room dose analysis for SGTR events using methods and assumptions within SRP guidance. The licensee also committed to revise a pending LAR to add certain filters to the Ventilation Filter Test Program (these were the filters credited in the licensee's updated safety analyses). Finally, the licensee committed to complete any licensee-proposed modifications to the plant or procedures to implement the approved design and licensing basis for control room habitability.

The licensee restarted the plant on February 2, 1998. On February 3, 1998, NRR provided comments on the CCHE JCO to the licensee (Ref. 26). Based on information provided and licensee commitments described in Reference 25, the staff concluded that reasonable assurance exists that the licensee's control room doses following design basis accidents will meet the requirements of GDC-19 and SRP Chapter 6.4 during all operating modes. Regarding concerns with the SGTR analysis, NRR stated the position that iodine spiking must be addressed since TSs allow operation at RCS radioactivity concentrations that are based, in part, on iodine spiking. NRR also stated that "design basis analyses are expected to model the most limiting credible scenarios which, for a SGTR, includes LOOP and iodine spiking." NRR noted that the licensee had agreed to re-perform the SGTR analysis using assumptions compatible with the applicable SRP and to submit the re-analysis within 6 months from restart. NRR stated that "the licensee may propose acceptable technical justifications for deviations from the SRP guidance. References to prior licensing basis, absent a technical justification, will not be acceptable."

### **Control Complex Habitability Envelope – Audit Results**

Staff actions rejecting JCO analyses which did not include iodine spiking could appear to be an unrecognized backfit. However, the staff held that the licensee was required to address the consequences of the transient (i.e., spike) iodine concentrations provided in the TS and that the unacceptable dose result caused by that assumption was a compliance matter. It would appear that better communication between the staff and the licensee would have alleviated some of the problems.

Similarly, staff actions to apparently reject the JCO because the supporting analyses did not include analytical assumptions outside the licensee's design or licensing bases, (e.g., LOOP for SGTR analysis), can be considered an unrecognized backfit. Although the staff has claimed that inclusion of the stated assumptions was not a prerequisite for approval of the JCO or closure of the overall issue (but staff requests were only trying to reflect the commitment that the licensee had made verbally in a meeting), this fact was not clearly or effectively communicated to the licensee.

### **3. Emergency Operating Procedure – Background**

On December 24, 1997, Region II requested NRR help in answering licensing basis questions which arose during an EOP inspection (Ref. 27). Inspectors identified a concern with the assumptions used for the SGTR accident analysis. Specifically, the analysis did not include consideration of a LOOP or a single failure. However, if a single failure was assumed, only one high-pressure injection pump would be available for RCS system makeup which may not be sufficient to maintain an adequate subcooled margin. Once subcooled margin was lost, EOPs directed tripping the reactor coolant pumps (RCPs). Without RCPs, the driving head for pressurizer spray is lost and cooldown within the assumed time frame may not be possible. Even if adequate subcooled margin is recovered, EOPs did not allow RCP restart for almost four hours in some cases. Any increase in cooldown duration increases the offsite dose consequences. Also, other more limiting single failures would increase the dose consequences. Further, the condenser was assumed to be available, which is only possible with offsite power available. Region II noted that this last issue appeared generic to Babcock & Wilcox plants.



### **Emergency Operating Procedure – Resolution**

On August 3, 1998, NRR responded to Region II's TIA via a pre decisional memo. The August 3, 1998, memo attached January 15, 1998, and February 12, 1998, evaluations from NRR technical branches. NRR concluded that the licensing bases for a SGTR accident at the plant assumed neither a concurrent loss of offsite power nor a concurrent single active failure. As such, the results of the licensing basis SGTR at the plant may not bound the results of analysis using current SRP guidance. However, results of a licensee analysis using many of the SRP assumptions indicated that the dose consequences were within regulatory limits. The licensee had submitted these results in a revised Control Room Habitability Report (Ref. 28). In one of the attachments, NRR technical staff noted that the licensee took credit for iodine plateout in the main condenser, which results in a reduction in the postulated iodine release by four orders of magnitude. This same attachment noted that the majority of pressurized-water reactor plants have not been allowed this credit because the LOOP assumption makes the main condenser unavailable.

### **Emergency Operating Procedure – Audit Results**

The documentation reveals several problems with the staff implementation of the backfit rule. Many of the issues appear to be unrecognized backfits and involved issues which appeared to also apply to other B&W plants. The issues were generally not recognized as potential backfits despite licensee assertions that certain assumptions, analyses, or acceptance criteria were beyond the plant's licensing bases. Further, the generic backfit process was not applied, but rather individual plant licensing actions were pursued.

## **APPENDIX F**

### **Nuclear Energy Institute Issue – Equipment Qualification**

#### **Background**

NRR inspection staff identified a concern involving the environmental qualification (EQ) of the governor controls for the turbine-driven auxiliary feedwater pump (TDAFWP). The governor control panel for the TDAFWP at this plant is located in the TDAFWP area below the main steam and main feedwater trestle. The licensee did not consider the governor controls as part of the EQ program. Conversely, the inspection team held that EQ was required. This issue was left as an unresolved item in the inspection report.

#### **Position Descriptions**

The licensee responded to the unresolved item in a May 27, 1997, letter (Ref. 29). In a September 30, 1981, response to NRC Inspection and Enforcement Bulletin (IEB) 79-01B, the licensee had stated that the steam trestle area was an outdoor area. The licensee concluded that for the postulated main steam line break, the pressure spike would be dissipated almost immediately and the resultant air temperature spike would be of very short duration such that the equipment would not in effect experience a harsh environment. The licensee further stated that the Franklin Research Center, as contractor for the NRC to review the IEB 79-01B EQ files, agreed with the licensee and indicated in their Technical Evaluation Report of February 28, 1983, that the equipment in the steam trestle area was in a mild environment and outside the scope of IEB 79-01B. The NRC issued a 1983 safety evaluation (Ref. 30) based on the contractor's technical evaluation report. Therefore, the licensee believed that requiring the steam trestle area to be in their EQ program was a backfit.

Region II requested technical assistance on this matter (Ref. 31). On March 31, 1999, NRR provided a response to Region II (Ref. 32). This memo included a safety evaluation developed by the Electrical Engineering Branch of NRR. The safety evaluation concluded that the safety significance of this EQ issue is minimal and that it is extremely unlikely that functional performance of the TDAFWP governor control equipment would be precluded or degraded due to a steam trestle area high-energy break line. Staff, however, concluded that for compliance, the licensee's Unit 1 steam trestle area should be treated as harsh and the TDAFWP governor control equipment should meet the relevant EQ requirements. The staff recommended, in view of the minimal safety significance and prior staff evaluation and finding, that this matter not be pursued further.

NRC Region II informed the licensee in writing of the resolution of this matter on June 14, 1999 (Ref. 33). NRC's final conclusion was that the governor controls located in the steam trestle area are in a harsh environment and must be qualified in accordance with the requirements of 10 CFR 50.49. The basis for this conclusion was provided in two memoranda (Ref. 32) and (Ref. 34) enclosed with the letter. The conclusion was based on: (1) the specified high-energy pipe break environment for the steam trestle area is a harsh environment and not a mild environment, as defined by 10 CFR 50.49(c); (2) the April 21, 1983, safety evaluation report did not relieve the licensee from having to comply with the requirements of 10 CFR 50.49;

(3) 10 CFR 50.49 requires that electric equipment important to safety located in a harsh environment be qualified in accordance with 10 CFR 50.49, unless the equipment had been previously qualified in accordance with the Division of Operating Reactor Guidelines; and (4) the safety-related steam auxiliary feedwater pump governor controls had not been previously qualified in accordance with either the Division of Operating Reactor Guidelines or 10 CFR 50.49 (Ref. 32).

On August 9, 1999, Region II issued an inspection report (Ref. 35). The inspection report documented that the licensee had initiated Condition Report 99-0780 to address the steam trestle EQ issue. As part of the extent of condition review, the licensee identified more than 75 other examples of safety-related equipment located in the Unit 1 steam trestle area that were neither qualified to the requirements of 10 CFR 50.49 nor protected by a weatherproof enclosure. The failure to comply with 10 CFR 50.49 was identified as an apparent violation.

### **Audit Observations and Results**

The audit team cannot conclude that this issue involves a backfit. The audit team notes that the licensee has not filed a backfit appeal and so appears to have accepted the final resolution of this issue. The audit team also notes that the issues involved were apparently not trivial as evidenced by the fact that the issue took more than 2 years from identification to resolution. While the issue was being resolved, more than 75 similar examples went uncorrected at this licensee.

Based on discussions with the licensee, the audit team believes that the delay and ineffective communications regarding the status and resolution of this issue were the sources of dissatisfaction which prompted the licensee to provide this as a backfit example.

As with several of the previous issues, early and frequent communication with the licensee, (in this case, the nature and complexity of resolving EQ issues, and the priority and status of the resolution) may have precluded this issue. It should be noted that current NRR guidance calls for staff to engage early regarding licensing actions, and for the use of risk insights to establish priorities and raise issues as appropriate.

**APPENDIX G**  
**Nuclear Energy Institute –**  
**Issues Not Evaluated**

**Barrier Doors**

This issue was dropped at the licensee's request based on NRR/licensee interactions. This was an ongoing issue which involved plants in other regions.

**Fire Protection (Multiple Spurious Actuations--“Smart, Hot Shorts”)**

This issue was dropped because of its generic implication. The issue is being addressed, for example, by Boiling Water Reactor Owners Group activities and interactions with NRR. The audit team notes that this issue provides *prima facie* evidence of a problem with the clarity of fire protection rules or guidance, in that nearly 20 years after 10 CFR 50 Appendix R was written, significant disagreement exists between licensees and the NRC regarding what the requirements of the rule.

**Seismic Qualification**

This issue was dropped based on it being an ongoing, controversial, and generic issue. Further, seismic qualification is a highly complex and technical area. The audit team lacked expertise on this topic, and did not view that we could meaningfully contribute on this issue without investing inordinate time and effort to learn this topic. Such investment, we believed, would substantially and negatively impact the performance of the remainder of the audit.

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