

MEMORANDUM TO: Chairman Jackson
Commissioner Rogers
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan

October 21, 1996

FROM: James M. Taylor
Executive Director for Operations

Original signed by
James M. Taylor

SUBJECT: THREE DESIGN CERTIFICATION ISSUES

The Nuclear Energy Institute (NEI) sent an unsolicited letter, dated September 23, 1996, to the Director of the Office of Nuclear Reactor Regulation (NRR) on three design certification issues. In this letter, NEI proposed revised rule language for the final design certification rules that were provided for the Commission's consideration in SECY-96-077, "Certification of Two Evolutionary Designs," dated April 15, 1996. NEI also sent a letter, dated September 16, 1996, to Chairman Jackson that provided additional information in response to questions that were asked in the August 27, 1996 briefing on design certification rulemaking. The NRR staff's response to NEI's proposals is provided in the attached comment analysis. The Senior Review Group (SRG) has reviewed the attachment and agrees with NRR's response. The NEI proposals do not alter the staff's positions in SECY-96-077 or the SRG recommendations that were provided in my memorandum to the Commission, dated August 13, 1996.

Attachment: Comment Analysis

cc: SECY
OGC
OCA
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CONTACT:
J. N. Wilson, NRR
415-3145

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Central File, (Project No. 689, Docket Nos. 52-001 & 52-002)
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COMMENT ANALYSIS

This analysis responds to NEI's proposals on three design certification issues that were submitted in a letter, dated September 23, 1996, to the Director of NRR and to some additional NEI comments in a letter to the Chairman, dated September 16, 1996.

Finality for Technical Specifications

NEI's proposal is to place the partial technical specifications into Tier 2 of the Design Control Document (DCD). As the staff previously stated in its memorandum to the Commission, dated August 13, 1996, it would not be appropriate to apply the special backfit provisions of § 52.63 to technical specifications or other operational requirements that have not received a comprehensive safety review. The completion of the technical specifications also should not be restricted by the special backfit provision in § 52.63. However, NEI proposed some change provisions for the partial technical specifications that are generally consistent with the alternative approach that was identified by the staff in its previous comment analysis. These new change provisions would work best if the partial technical specifications are treated as a special category of information in the DCD as previously recommended by the Senior Review Group (SRG). In addition, the staff still supports NEI's proposal that, after the combined license (COL) is issued, the partial technical specifications in the DCD would "have no further effect as to that licensee," and would be subject to the backfit provisions in § 50.109.

NEI's proposed revisions to Sections 2(d)(1) and 3(e) of the final design certification rules would re-insert the partial technical specifications into Tier 2. The staff supports the previous SRG recommendation that the partial technical specifications not be included in Tier 2. This is because the technical specifications will be unlike other information in Tier 1 or Tier 2 in terms of finality and the change process. While NEI's proposal may be possible with carefully crafted wording in the final rules, it would result in unnecessary confusion regarding the use and legal standing of Tier 2.

The NEI proposal for a new Section 8(d), which sets forth a change process for the partial technical specifications that would be governed by the standards in § 2.758 and § 50.109, is generally acceptable. However, NEI's proposed language for this new change process will need to be modified in some respects. Most importantly, NEI's proposed language for application of § 52.63 to technical specification changes is overly broad, referring to a "change to a requirement specified in the Design Control Document." As recommended by the SRG, only "design changes" resulting from technical specification changes should be subject to § 52.63. Also, in applying § 2.758 and § 50.109, it will be necessary to determine from the certification rulemaking record what safety issues associated with the technical specifications were considered and resolved. This is because § 2.758 will not bar review of a safety matter that was not considered and resolved in the design certification rulemaking. There will be no backfit restriction under § 50.109 because no prior position was taken on this safety matter. Therefore, the staff will develop a revised Section 8(d) that conforms with the SRG recommendations in the August 13, 1996 comment analysis.

Finality for operational requirements

NEI's proposal to assign finality to information in the DCD that is related to operational requirements is unacceptable. NEI's proposal does not resolve the fact that operational matters were not comprehensively reviewed and finalized for design certification, as discussed in the staff's comment analysis dated August 13, 1996. While the information in the DCD that is related to operational requirements was necessary to support the staff's safety review of the standard designs, the review of this information was not sufficient to conclude that the operational requirements are fully resolved and ready to be assigned finality under § 52.63.

For example, the staff's review of the preservice and inservice inspection programs was limited to assuring that there was sufficient access to the reactor coolant pressure boundary and that "relief requests" would not be needed (refer to Section 5.2.4 of NUREG-1503). In addition, NEI's proposal to control operational requirements under the special backfit provisions of § 52.63 appears to conflict with its proposal to control technical specifications under § 2.758 and § 50.109. Given the similar legal status of operational requirements and technical specifications (both are operating license conditions), the staff would treat both the technical specifications and other approved operational requirements the same for purposes of finality and changes, which is under § 52.63 insofar as the design is changed and under § 2.758 and § 50.109 to the extent that an NRC-approved position is changed or challenged but no design change is required. The staff continues to support the need for Section 4(c), or its equivalent, in the final rules.

NRC review of renewal applications

NEI stated that principles for renewal reviews can and should be established in the design certification rules. The staff agrees that this matter should be addressed in the statements of consideration, because of the current controversy, but it should not be codified in the design certification rules. While the staff agrees with some of the statements made by NEI on this matter, it rejects NEI's proposal to apply the finality provision of § 52.63 to the review of renewal applications because this would suggest improperly that NRC, in its renewal review, is bound by previous safety conclusions in the initial certification review. The type of renewal review was resolved by the Commission during the development of 10 CFR Part 52. The Commission determined that the backfit standard in § 52.59(a) controls the development of new requirements during the reviews of applications for renewal. Therefore, we disagree with NEI's proposed revision to Section 6(b) of the design certification rules. Also, NEI's proposal for a new Section 6(e) is unnecessary because this process is already correctly covered in § 52.59. The staff proposes to include language for the Statements of Consideration that conforms with the previous analysis of this matter (memorandum of August 13, 1996), such as:*

NRC does not plan or expect to be able to conduct a *de-novo* review of the entire design if a certification renewal application is filed under 10 CFR 52.59. NRC expects that the review focus would be on changes to the design that are proposed by the applicant and insights from relevant operating experience or other material new information arising since the staff's review of the design certification.

Applicable Regulations

NEI submitted a number of comments on applicable regulations, in a letter to Chairman Jackson dated September 16, 1996, which were in addition to its comments on the three design certification issues discussed above. In these comments, NEI continues to claim that the design descriptions in the DCD could be used in lieu of applicable regulations. The staff has explained numerous times that DCD design descriptions cannot function as a surrogate for NRC regulations that are applicable to the certified design. Refer to the letter from the NRC to NEI dated July 25, 1994 and to the discussion on applicable regulations in SECY-96-077. Also, NEI's comments on the standard to be used to evaluate proposed design changes does not address the language in § 52.63, which is "regulations applicable and in effect at the time the certification was issued, ..." Clearly the Commission intended to use the applicable regulations to evaluate proposed design changes, consistent with past practice, and not certified design descriptions. The NRC did not adopt design certification by rulemaking for the purpose of replacing its regulations. In short, the designs themselves are no substitute for the standards to be used for reviewing them.

Quay
ACTION

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FROM:

DUE: 10/11/96

EDO CONTROL: GT96731

DOC DT: 09/23/96

FINAL REPLY:

Ralph E. Beedle
Nuclear Energy Institute (NEI)

TO:

William Russell, NRR

Received 9/27/96

FOR SIGNATURE OF :

** GRN **

CRC NO: 96-1019

Executive Director

DESC:

ROUTING:

ENCLOSES PROPOSED RULE LANGUAGE FOR THREE OF THE
DESIGN CERTIFICATION ISSUES DISCUSSED AT THE
8/27/96 COMMISSION BRIEFING

Taylor
Milhoan
Thompson
Blaha

DATE: 09/26/96

ASSIGNED TO:

CONTACT:

NRR

Russell

SPECIAL INSTRUCTIONS OR REMARKS:

Prepare Memo to Chairman providing NRR and
Senior Review Group views.

NRR RECEIVED:

SEPTEMBER 27, 1996 → *Quay - action*

NRR ACTION:

DRPM:MARTIN

NRR ROUTING:

MIRAGLIA
THADANI
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ACTION

DUE TO NRR DIRECTOR'S OFFICE

BY

Oct. 8, '96

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Russell
Cy. Laper
Milton
Thompson
Blake

PAPER NUMBER: CRC-96-1019

LOGGING DATE: Sep 25 96

ACTION OFFICE: EDO

AUTHOR: RALPH BEEDLE
AFFILIATION: DISTRICT OF COLUMBIA

ADDRESSEE: WILLIAM RUSSELL, NRR

LETTER DATE: Sep 23 96 FILE CODE: IDR-14 PT 52

SUBJECT: DESIGN CERTIFICATION RULEMAKING

ACTION: Appropriate

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NUCLEAR ENERGY INSTITUTE

Ralph E. BeedleVICE PRESIDENT AND
CHIEF NUCLEAR OFFICER
NUCLEAR GENERATION

September 23, 1996

Mr. William T. Russell, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

PROJECT NUMBER: 689

Dear Mr. Russell:

Enclosed is a copy of the proposed rule language for three of the design certification issues discussed at the August 27, 1996, Commission briefing. We believe this language would provide NRC flexibility in later licensing proceedings, while giving an appropriate measure of finality to matters resolved in the design certification rulemakings.

We hope this additional information is useful to the Senior Review Group and Commission in considering options for resolving these issues. If you have any questions or wish to discuss the enclosed information, please contact Ron Simard at (202) 739-8128.

Sincerely,

A handwritten signature in dark ink, appearing to read "R. Beedle", is written over a horizontal line.

Ralph E. Beedle

REB/ec
Enclosure

Finality for Standardized Technical Specifications in the Design Control Document

Background

In the August 13, 1996, "options paper," the NRC Senior Review Group recommended that the standardized technical specifications in the DCD not be included in Tier 2 of the design certification rules. The basis for this recommendation was the NRC staff concern that the Tier 2 change process would excessively limit the NRC's ability to impose changes to the technical specifications, e.g., to reflect operating experience. We believe the staff's concerns may be accommodated while providing appropriate finality to the standardized technical specifications reviewed and approved as part of the design certification process.

Industry Recommendation

Finality under Section 52.63 can be accorded to the standardized technical specifications, while addressing the NRC staff concerns, as follows:

- The standardized technical specifications in Chapter 16 of the DCDs would remain part of Tier 2 of the design certification rules. This ensures that the standardized technical specifications are considered resolved (i.e., have finality) within the meaning of Section 52.63(a)(4).
- Change process provisions appropriate to the special nature of the DCD technical specifications would be established in Section 8 of the design certification rules to accommodate the NRC staff concerns. Specifically,
 - ⇒ Consistent with the Senior Review Group recommendation and fundamental principles of Part 52, any change to the standard design, including those incidental to a generic or plant-specific change to the standardized technical specifications, would have to satisfy Section 52.63.
 - ⇒ Generic changes to the standardized technical specifications that do not impact the standard design would be accomplished by rulemaking meeting the criteria of 10 CFR 50.109.
 - ⇒ A COL applicant may propose a departure from the standardized technical specifications in accordance with Section 8(b)(4) of the design certification rules.
 - ⇒ Consistent with the Senior Review Group recommendation, the NRC may impose a plant-specific departure from the standardized technical

specifications under a "Section 2.758-like" process, provided, however, that changes that would impact the standard design would be governed by Section 52.63.

⇒ Consistent with the Senior Review Group recommendation, a party to an adjudicatory COL proceeding may contest the plant-specific technical specifications only in accordance with Section 2.758.

The industry also agrees with the Senior Review Group's recommendation that after the COL is issued, the standardized technical specifications in the DCD would have no further effect as to that licensee. The standardized technical specifications would be integrated with the licensee's plant-specific requirements as part of the COL application, review and approval process, and the resulting COL would contain the approved technical specifications for that plant. After COL issuance, any changes imposed by the NRC on a COL holder would have to satisfy the provisions of Section 50.109. Licensee changes to the plant-specific technical specifications would be processed in accordance with Section 50.90.

The following is suggested design certification rule language on the finality of technical specifications:

Revised Section 2(d)(1)

Information required by 10 CFR 52.47, with the exception of ~~technical specifications and~~ conceptual design information;

Revised Section 3(e)

Conceptual design information ~~and generic technical specifications~~, as set forth in the generic DCD, are ~~is~~ not part of this appendix.

(New) Section 8(d)

Changes to the technical specifications in Chapter 16 of Tier 2 shall be governed by the following provisions. The NRC, whether on its own motion or in response to a petition from any person, may not make a generic change in these technical specifications except by rulemaking meeting the criteria of 10 CFR 50.109, provided, however, that proposed technical specification changes that would directly or indirectly require a change to a requirement specified in the Design Control Document must meet the criteria of Section 52.63. The standard technical specifications applicable to a combined license applicant shall be those in the referenced design certification in effect six months prior to the

submittal of a combined license application. These technical specifications are not subject to modification by the NRC in a combined license proceeding referencing this rule, absent a determination by the Commission that special circumstances exist with respect to a particular technical specification such that application of the technical specification would not serve the purpose for which it was adopted; provided, however, that the NRC may not impose a modification that would directly or indirectly require a change to a requirement specified in the Design Control Document unless the criteria of Section 52.63 are met. A party to a combined license adjudicatory proceeding referencing this rule may not contest these technical specifications except in accordance with 10 CFR 2.758. An applicant for a combined license may propose a departure from these technical specifications in accordance with Section 8(b)(4) of this Appendix. After issuance of the combined license, the technical specifications in Chapter 16 of Tier 2 no longer have any effect with respect to the license, and the technical specifications in the license become effective. Changes to plant-specific technical specifications after combined license issuance will be processed in accordance with 10 CFR 50.90.

Finality of Requirements in the Design Control Document (DCD)

Background

The DCD contains requirements specifying the standard design as well as a substantial number of requirements that are closely related to the design. The August 13 "options paper" recommends that design, i.e., hardware, requirements in the DCD should have finality under Section 52.63. However, under the NRC staff recommendation, operational-related requirements in the DCD - - which are closely coupled to the design - - would not have Section 52.63 finality.

On the basis on Part 52 itself, experience in implementing design certification for the ABWR and System 80+, and explicit Commission guidance, our conclusion is that Section 52.63 finality should be accorded to all DCD requirements, including operational-related and other non-hardware requirements. In particular,

- Section 52.47 (*Contents of applications*) requires that design certifications contain "a level of design information sufficient to enable the Commission to judge the applicant's proposed means of assuring that construction conforms to the design and to reach a final conclusion on all safety questions associated with design...." Moreover, Section 52.47 provides that "the staff shall advise the applicant on whether any technical information beyond that required by this section must be submitted." Thus, Section 52.47 contemplates that information beyond that specifying hardware requirements would be required for design certification.
- Section 52.63(a)(4) states that the Commission shall treat as resolved those matters resolved in connection with issuance or renewal of a design certification." The February 15, 1991, Staff Requirements Memorandum on SECY-90-377 states, "the Commission agrees with the staff that the process provides issue finality on all information provided in the application that is reviewed and approved in the design certification rulemaking."
- To support their safety reviews on the designs, the NRC requested and received from applicants substantial technical information associated with the designs that goes beyond specification of hardware requirements. This additional technical information includes the following:
 - ⇒ numerous analyses, assumptions and bases supporting the selection and design of systems and features

- ⇒ requirements for periodic testing and inspection of systems and components
- ⇒ system operating limits
- ⇒ actions to minimize risk during shutdown
- ⇒ standard technical specifications
- ⇒ requirements for the composition of the Human Factors Engineering Design Team and Human-System Interface Program Plan
- ⇒ quality assurance and reliability assurance requirements for design of plant systems, structures and components
- ⇒ requirements for preoperational and start-up testing
- ⇒ system valve line-up requirements during normal operation
- ⇒ requirements on control room staffing
- ⇒ Emergency Procedure Guidelines
- ⇒ numerous other requirements (such as performance of a seismic walkdown, fuel assembly acceptance, inerted containment (ABWR only), maximum reactor thermal output rating, containment leak rate, ECCS test and surveillance intervals, etc.)

These and similar requirements are interwoven throughout both tiers of the DCD and were integral to the NRC safety review and approval of the designs. Presumably, the NRC would not have granted final design approval to the ABWR and System 80+ designs without this information. Accordingly, and because this additional technical information associated with the design has also been subject to thorough NRC and public scrutiny in the design certification rulemakings, these requirements should have finality under Section 52.63, like all other requirements in the DCD.

Industry Recommendation

The following alternative language is suggested for Section 4(c) of the design certification rules:

The Commission reserves the right to impose additional requirements for facility operation on license applicants or holders of licenses

referencing this Appendix by rule, regulation, order, or license condition. If the additional requirements directly or indirectly require a change to a requirement specified in the Design Control Document referenced by this Appendix, then Section 8 (*Processes for changes and departures*) of this Appendix applies.

Although we consider Part 52 and existing Commission guidance to be clear concerning the finality of design certification information, the above alternative rule language could be used by the Commission to clarify this issue. Including such language in the final design certification rules would make clear that the NRC is not restricted by Section 52.63 from imposing operational or other additional requirements on COL applicants or licensees, provided that the additional requirements do not directly or indirectly require a change to requirements specified in the DCD. We believe this would be an appropriate and workable resolution to this issue for the following reasons:

- provides finality to all information reviewed and approved as part of the DCD, consistent with clear Commission guidance
- reflects the acknowledged principle that operational and other requirements that have not been reviewed would not have 52.63 backfit protection
- recognizes that, under Part 52, Subpart C, operational requirements beyond those specified in the DCDs, which will constitute the bulk of operational requirements for the plant, will be established through NRC review and approval of a COL application.

The operational information submitted with COL applications will be consistent with that required by 10 CFR 50.34 for operating license applicants and include, (1) program and process information beyond the scope of the design certification, such as personnel training, physical security, emergency planning, operational quality assurance, and (2) additional information concerning implementation of operational-related requirements specified in the DCDs. For example, Appendix 18A of the ABWR DCD and Volumes 23 and 24 of the System 80+ DCD specify Emergency Procedure Guidelines (EPGs) for the plant because the NRC staff determined that this information was necessary to facilitate their safety conclusion on the design. The EPGs would therefore be protected from backfits by Section 52.63. However, Emergency Operating Procedures, which are based on the EPGs, are not specified in the DCD and therefore will not be subject to Section 52.63. This more detailed information will be submitted by the COL applicant for NRC review and approval.

In sum, the information contained in the design certification rules is that which is necessary and sufficient to enable the NRC to reach final safety and compliance conclusions on the standard designs. This information, including any changes made in accordance with the design certification change process, is required for a COL application. Plant-specific COL information requirements will be established, consistent with the requirements of 10 CFR 50.34, through NRC review and approval in the COL proceeding.

Principles for NRC Review of Design Certification Renewal Applications

Background

In the August 13 options paper, the NRC staff stated that it is premature to address the scope of renewal reviews in the design certification rules. We believe strongly that based on the considerable convergence of industry and NRC staff views in this area, principles for renewal reviews can and should be established in the design certification rules. This paper outlines the acknowledged principles of NRC renewal reviews and provides suggested language for reflecting these principles in the final rules.

Acknowledged Principles of NRC Renewal Reviews

- The certification renewal applicant may propose changes to the original design certification, which will be reviewed based on NRC regulations in effect at the time of renewal.
- If the NRC determines that relevant operating experience or other material new information since the original certification undermines the previous safety or compliance findings, the NRC may impose design changes at renewal as necessary to assure adequate protection of the public health and safety or compliance with regulations in effect at the time of original design certification. Section 52.63 is, of course, available to NRC throughout the life of the certification to impose such design changes.
- In addition, based on such intervening experience or material new information, the NRC may impose design changes at renewal that are determined to provide a substantial increase in overall safety protection and are cost-justified.
- Further, per Section 52.59(a), if amendments requested by a renewal applicant entail such an extensive change to the original design certification that an essentially new standard design is being proposed, an application for a new design certification must be filed. Such an application would be subject to a de novo (wholly new) review.
- As clarified at the August 27 Commission briefing, there is agreement that the NRC would not be precluded from considering new information which could have altered the Commission's consideration and approval of the design had it been known at the time of the original certification review. Moreover, the industry agrees that the scope and content of the updated information to be submitted by a renewal applicant will be as prescribed by the NRC. These clarifications

eliminate the basis for the two primary concerns stated by the staff in its August 13 options paper.

Industry Recommendation

The industry believes that the final design certification rules should codify principles that provide the focus for renewal review and rulemaking determination. That focus should be on relevant experience or other material new information since certification, and on changes proposed by the applicant or NRC. It is unnecessary for the NRC staff to re-review design certification information that is unaffected by either of the foregoing. Only in the case where there have been such extensive design changes proposed by a renewal applicant that a new certification application is required by Section 52.59(a) is a de novo (wholly new) review appropriate.

In short, we agree with the view expressed by Mr. Russell concerning NRC renewal review at the August 27 Commission briefing (tr. p. 88):

We don't believe it is a review from scratch, obviously. It would be a review from an experience base with whatever new information has been developed . . .

Including basic renewal principles in the design certification rules would be analogous to the resolution of the ITAAC verification issue. In each case, rule language provides the policy focus for subsequent implementation. In both cases, there is common recognition that further industry-NRC interaction and subsequent NRC implementation guidance are needed.

Proposed language reflecting renewal review principles is provided below for Sections 6(b) and 6(e) of the rules. If the Commission decides not to incorporate these principles in the final rules, we believe they should appear in the Statements of Consideration.

Revised Section 6(b)

The Commission considers the following matters resolved within the meaning of 10 CFR 52.63(a)(4) in subsequent proceedings for issuance of a combined license, amendment of a combined license, renewal of a combined license, design certification renewal proceedings (as consistent with 10 CFR Section 52.59 and with Section 6(e) herein), proceedings held pursuant to 10 CFR 52.103, and enforcement proceedings involving plants that reference this appendix: ...

New Section 6(c)

An applicant for design certification renewal shall update the information and data contained in the previous application for design certification to identify and evaluate, in accordance with application content requirements prescribed by NRC, relevant operating experience and other material new information between the time of certification and renewal application. NRC will determine, based on its review and renewal rulemaking, whether the new information requires a change in the previously certified design in order to (1) provide adequate protection of the public health and safety or the common defense and security, (2) ensure compliance with NRC regulations in effect at the time of the original certification, or (3) provide the substantial, cost-justified increase in overall protection of the public health and safety or common defense and security specified in 10 CFR 52.59(a). NRC review of the renewal application and rulemaking thereon will also include review of any modification proposed by the renewal applicant consistent with 10 CFR 52.59(a).

ACTION

EDO Principal Correspondence Control

FROM: DUE: / / EDO CONTROL: GT96717
DOC DT: 09/16/96
FINAL REPLY:

Joe F. Colvin
NEI

TO:

Chairman Jackson

FOR SIGNATURE OF : ** GRN ** CRC NO: 96-1004

DESC:

ROUTING:

REF 8/27/96 COMMISSION BRIEFING ON DESIGN
CERTIFICATION RULEMAKINGS - PROVIDES ADDITIONAL
INFORMATION IN RESPONSE TO QUESTIONS

Taylor
Milhoan
Thompson
Blaha
Morrison, RES

DATE: 09/23/96

ASSIGNED TO: CONTACT:
NRR Russell

SPECIAL INSTRUCTIONS OR REMARKS:

For Appropriate Action.

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

PAPER NUMBER: CRC-96-1004 LOGGING DATE: Sep 19 96

ACTION OFFICE: EDO

AUTHOR: JOE COLVIN
AFFILIATION: DISTRICT OF COLUMBIA

ADDRESSEE: CHAIRMAN JACKSON

LETTER DATE: Sep 16 96 FILE CODE: IDR-14 PT 52

SUBJECT: REF AUG 27 BRIEFING ON THE DESIGN CERTIFICATION
RULEMAKING...PROVIDES ADDL INFORMATION TO QUESTIONS
RAISED BY THE COMM ON THIS SUBJECT

ACTION: Appropriate

DISTRIBUTION: CHAIRMAN, RF

SPECIAL HANDLING: NONE

CONSTITUENT:

NOTES:

DATE DUE:

SIGNATURE: DATE SIGNED:
AFFILIATION:



NUCLEAR ENERGY INSTITUTE

Joe F. Colvin

PRESIDENT AND
CHIEF EXECUTIVE OFFICER

September 16, 1996

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

Dear Chairman Jackson:

During the August 27 briefing on the design certification rulemaking, the Commission raised several questions on remaining certification issues. This letter provides additional information in response to those questions.

We appreciate the continued strong interest of the Commission in the appropriate resolution of the remaining design certification issues and hope the enclosed information is helpful in your deliberations on these issues.

Sincerely,

A handwritten signature in dark ink, appearing to read "Joe F. Colvin", is written over a circular stamp that contains the name "Joe F. Colvin".

Joe F. Colvin

Enclosure

c: Commissioner Kenneth C. Rogers
Commissioner Greta J. Dicus
Commissioner Nils J. Diaz
Commissioner Edward McGaffigan, Jr.
Mr. James M. Taylor (EDO)

**August 27 Commission Briefing on the Design Certification Rulemakings
Responses to Questions on Remaining Issues and Points of Clarification**

Questions:

1. Does the Design Control Document (DCD) provide standards for review of future design changes? Is it necessary to add the proposed "applicable regulations" to the rules for this purpose?
2. How would "applicable regulations" be adverse to design stability? Give specific examples.
3. Does Section 8 adequately ensure that enhanced safety will be preserved?
4. What are the differences between the industry and the NRC staff on the "applicable regulations" issue?
5. What is the backfit standard at renewal?
6. Clarify the options for Commission resolution of the issue of the scope of NRC review at certification renewal.
7. What is the status of the NRC review of the technical specifications and operational-related requirements specified in the DCDs?
8. Are "applicable regulations" needed so that the NRC would not be compelled to grant an exemption from a design feature that is subject to an "applicable regulation?"

**August 27 Commission Briefing on the Design Certification Rulemakings
Responses to Questions on Remaining Issues and Points of Clarification**

1. **Does the Design Control Document (DCD) provide standards for review of future design changes? Is it necessary to add the proposed "applicable regulations" to the rules for this purpose?** (Tr. pp. 74-75).
- Because of the extensive record on the technical and severe accident issues in question and the extensive information in the DCDs (and NRC Final Safety Evaluation Reports (FSERs)), it is not necessary to add the proposed "applicable regulations" to the rules for the purpose of providing standards for review of future design changes.
 - The DCD contains design descriptions and extensive supporting information on design functions, performance characteristics and bases. SECY-90-016 and SECY-90-087 and their respective Commission SRMs provide policy guidance and associated bases on the resolution of technical and severe accident issues, and the FSER documents the NRC staff bases for determining that specific designs conform to this guidance. It is this detailed information that a future NRC reviewer would use in evaluating the acceptability of a change to the Tier 1 or Tier 2 design. The extent of this information is illustrated by the following examples concerning design features addressed by two of the proposed "applicable regulations."

Example 1: "Applicable regulation" 5(c)(9) on core debris cooling calls for design features such as floor space for core debris spreading, a passive flooders and AC-independent water addition system, and concrete to protect the lower drywell liner and reactor pedestal. This standard is fully discussed in both the DCD and FSER. In particular,

— DCD Section 19.8.7 for the ABWR describes the design features to mitigate core damage "consistent with the issues discussed in SECY-90-016," including the AC-independent water addition system, the lower drywell flooders that provide core debris cooling, Containment Overpressure Protection System, the floor spreading area and concrete protection for the containment floor and reactor vessel pedestal. Section 9.5.12 of Tier 2 provides more detail on the core debris quenching function of the lower drywell flooders, and Section 5.4.7.1.10 of Tier 2 provides more detail on the functioning of the AC-independent water addition system in cooling the lower drywell in the event of core damage.

— Section 2.14.1 of Tier 1 describes the floor spreading space, the lower drywell flooders that provide core debris cooling, and the concrete to protect the containment floor and reactor vessel pedestal. Section 2.4.1 of Tier 1

describes the function of the AC independent water addition system in providing drywell cooling. Section 2.14.6 of Tier 1 describes the Containment Overpressure Protection System.

– Section 19.2.3.3.2 of the FSER addresses the provisions in SECY-93-087 on core debris coolability, including provisions related to floor spreading area, lower drywell flooders, AC-independent water addition system, sacrificial concrete, the reactor vessel pedestal, and the Containment Overpressure Protection System. This section also describes how the design of the ABWR meets these standards.

Example 2: "Applicable regulation" 5(c)(8) specifies the use on an on-site alternative AC power source for safe shutdown in the event of a station blackout. This standard is fully discussed in both the DCD and FSER. In particular,

- Section 1C.2.2 of Tier 2 for the ABWR identifies the design basis for the station blackout, including use of an Alternate AC source to comply with 10 CFR 52.63 and SECY-90-016, and Section 1C.2.4 shows how this standard is met by the Combustion Turbine Generator for the ABWR. Similar provisions are contained in Section 9.5.11 of Tier 2.
 - Section 2.12.11 of Tier 1 states that the Combustion Turbine Generator "functions as an alternative AC power source."
 - Sections 19.2.2.1.2 and 8.3.9 of the FSER discuss 10 CFR 50.63 and the provisions in SECY-90-016 which call for an Alternate AC source, and states that these provisions are met by the Combustion Turbine Generator.
- Similarly extensive information exists on the generic and design-specific resolution of each of the other technical and severe accident issues addressed by the proposed "applicable regulations." This information could be used in evaluating any design changes that may be proposed in the future, thus obviating the need to add "applicable regulations" for this purpose.

2. How would "applicable regulations" be adverse to design stability?
Give specific examples. (Tr. pp. 14-15, 18, 30).

Design stability would be undermined by the proposed additional "applicable regulations" because substantial portions of the DCD would be subject to lesser backfit protection than intended by Part 52. The Commission established Section 52.63 to provide greater backfit protection to certified standard designs (*i.e., design stability*) than that provided under Section 50.109 for plants licensed under Part 50. The staff proposal would revert back to "50.109-like" backfit protection for substantial portions of the DCD that specify design features and related DCD requirements credited in meeting "applicable regulations." The following examples illustrate why the proposed "applicable regulations" are a source of significant design instability and uncertainty.

Example 1: Section 3.4.C of Tier 1 for the ABWR identifies specific features that provide defense-in-depth, diversity, and protection against common-mode failures for digital instrumentation and control systems. Such features include a hardwired manual scram capability, hardwired manual capability to trip each safety division, and hardwired independent displays of specified plant parameters. In contrast, the broadly worded "applicable regulation" in Section 5(c)(3) of the rule states (emphasis added):

The digital instrumentation and control systems of this design must provide for:

- (i) *defense-in-depth and diversity,*
- (ii) *adequate defense against common-mode failures, and*
- (iii) *independent backup manual controls and displays for critical safety functions in the control room.*

Given this very general language, it would not be surprising if future NRC staff reviewers were to change the current interpretation of this "applicable regulation." Such changes could then be used as a basis for imposing backfits on the specific Tier 1 design features identified above. In particular, there is a significant potential that future NRC staff might require the installation of additional hard-wired instruments and controls beyond those currently listed in Tier 1.

Example 2: Tier 1 of the ABWR identifies numerous features that contribute to a low shutdown risk, including three separate divisions of Residual Heat Removal, main steam relief valves, automatic initiation of the High Pressure Core Flooder and Low Pressure Core Flooder upon low reactor vessel water level, an AC Independent Water Addition System, and multiple sources of AC power, among many other features. In contrast, the broadly worded "applicable regulation" in Section 5(c)(13) of the rule states (emphasis added):

This design must include assessments of:

- (i) *Features that minimize shutdown risk;*
- (ii) *The reliability of decay heat removal systems;*
- (iii) *Features that mitigate vulnerabilities resulting from other design features; and*
- (iv) *Features that assure the operator's ability to shut down the plant safely and maintain it in a safe condition in the event of fires and floods occurring with the plant in modes other than full power.*

Over the 60 year life of a plant that references the design certification, there undoubtedly will be further developments in the state-of-the-art with respect to shutdown risk features, and this "applicable regulation" would enable the staff to backfit such features in order to further "minimize" shutdown risk.

Example 3: Sections 2.14.1 and 2.14.6 of Tier 1 for the ABWR identify specific features to protect the containment from the effects of core debris, including minimum floor spreading space, drywell flooders valves that provide for core debris cooling, corium protection at least 1.5 meters thick for the areas beneath the reactor vessel, concrete protection for the reactor vessel pedestal, and a Containment Overpressure Protection System. In contrast to this level of specificity, the broadly worded "applicable regulation" in Section 5(c)(9) of the rule states (emphasis added):

For the severe accident sequences identified in Section 19E of the DCD, this design must include the following design features that, in combination with other design features, ensure that environmental conditions (pressure and temperature) described in Section 19E of the DCD resulting from interactions of molten core debris with containment structures do not exceed ASME Code Service Level C for steel containments or Factored Load Category for concrete containments for a time from the initiation of the accident sequence sufficient to mitigate them in view of their probability of occurrence and the uncertainties in severe accident progression and phenomenology:

- (i) *A minimum of 79 m² of unobstructed reactor cavity floor space for molten core debris spreading;*
- (ii) *A passive flooders system and an ac-independent water addition system capable of directly or indirectly flooding the reactor cavity for cooling molten core debris; and*
- (iii) *Concrete to protect portions of the lower drywell containment liner and the reactor pedestal.*

This vague and subjective language could lead to backfits on the specific design features in Tier 1 or supporting Tier 2 requirements as more information is developed in the future regarding the probability of occurrence of severe accidents and the progression and phenomenology of severe accidents.

- The proposed backfit protections do not mitigate this concern because we cannot predict with any degree of certainty how they will be used by future NRC staff. The technical and severe accident issues that are the subject of the proposed additional "applicable regulations" are characterized by relatively greater analytical uncertainty and/or address beyond design basis events of very low probability. On such matters, differences of opinion are inevitable concerning when new information indicates a "substantial" decrease in protection and whether there is a fix that provides a cost justified "compensating" increase. It is in this way that the concern about "design instability" becomes inseparable from overall licensing instability and uncertainty that would be caused by "applicable regulations."
- The NRC staff estimates that most, if not all, backfits will be procedural in nature. We must not underestimate the potential cost over the life of a plant of NRC-mandated procedural changes. Moreover, there is nothing in the proposed backfit provisions that would give sufficient protection against backfits to the standard design consistent with the intent of Part 52.

3. Does Section 8 adequately ensure that enhanced safety will be preserved? (Tr. p. 57).

- Yes. The advanced plant technical issues and enhanced safety features that are the subject of the proposed additional "applicable regulations" are addressed by Tier 1 requirements of the design. A generic change to these requirements requires new rulemaking and, in any event, cannot be made unless the change is necessary for adequate protection of the public health and safety or compliance with NRC regulations. A licensee may not deviate from these requirements for a specific plant except by an exemption request meeting the requirements of Section 52.63(b)(1) and approved by the Commission.
- Design information and requirements supporting and implementing Tier 1 design commitments are contained in Tier 2. Section 8 requires prior NRC review and approval of any change that involves an unreviewed safety question. The determination of whether a unreviewed safety question exists includes evaluation of the impact of a change on technical and severe accident design features, including those addressed by the proposed additional "applicable regulations."
- Thus, Section 8 provides adequate protection against the erosion over time of enhanced safety features that are part of the design certification.

4. What are the differences between the industry and the NRC staff on the "applicable regulations" issue? (Tr. pp. 34-35).

Fundamentally, the NRC staff wants the design certification rules to include new "applicable regulations," and the industry does not. This basic difference reflects a number of differences on the need and impact of the "applicable regulations," including the following:

- The staff believes that the proposed "applicable regulations" are necessary to comply with previous Commission guidance that severe accident issues be treated in design-specific certification rulemakings rather than generic rulemakings. The industry believes that the design-specific features in the DCD, which itself is part of the design certification rule, satisfy Commission guidance regarding design-specific rulemaking.
- The staff believes that "applicable regulations" are necessary to ensure maintenance of the level of safety and margins that the NRC believes it is approving through the design certifications. The industry believes that, absent "applicable regulations," the features in the design certifications together with the stringent controls on changes of those features, will provide substantial additional levels of safety and margins above those contained in existing plants. Furthermore, the industry believes that it is inappropriate for the NRC to codify by regulation the additional margins embodied in these advanced designs.
- The staff believes that the "applicable regulations" are necessary to provide the NRC with a basis for reviewing changes. The industry does not believe that "applicable regulations" are necessary for this purpose, because an adequate basis for reviewing changes already exists in the DCD, FSER, and NRC guidance in SECY-90-016 and 93-087.
- The staff believes that there is little likelihood that the "applicable regulations" will be used to impose backfits on the design. The industry believes that the "applicable regulations" are vague and subjective, and will be subject to new and different interpretations in the future that can be used to impose design backfits. In this regard, the proposed backfit standard for "applicable regulations" is similar to the backfit standard in Section 50.109, which has been used extensively to impose both design and procedural backfits on existing plants.
- In the August 27 Commission briefing, the staff stated that the proposed "applicable regulations" can be bifurcated into those that are basically deterministic in nature and those that are not. The staff implied that there may be less of a need to include the deterministic "applicable regulations" in the design certifications. The industry believes that none of the proposed

new "applicable regulations" are needed for design certification, and eliminating several of the proposed new "applicable regulations" would be a step in the right direction. However, the severe accident-related "applicable regulations" that would remain are the source of most of the uncertainty that so concerns the industry. Moreover, the fundamental policy concerns associated with the staff proposal are the same whether three or thirteen "applicable regulations" are proposed for the final rules.

5. **What is the backfit standard at renewal?** (Tr. pp. 47-49).

- Except in the design certification renewal rulemaking, backfits are restricted by Section 52.63. This means that backfits may be imposed to assure the adequate protection of the public health and safety or compliance with the regulations applicable and in effect at the time of the design certification. This reflects the Commission intent that Part 52 establish greater protection against backfits for design certification information than that provided by Section 50.109 for plants licensed under Part 50.
- The Commission also structured Part 52 to accommodate the potential that new information may be identified during the life of the certification that could lead to further improvement of the certified standard design. Thus, in addition to the ability to impose backfits, at any time, under Section 52.63 to assure adequate protection, the NRC may impose backfits under Section 52.59 during the certification renewal rulemaking. This means that the NRC may, at time of renewal, impose additional cost-justified requirements that may result from the identification of significant new information or operating experience since the design was originally certified.
- Thus, Part 52 provides the authority for the NRC to impose cost-justified backfits at time of renewal.
- It is important to emphasize the point made by Mr. Malsch in responding to the question of Chairman Jackson concerning the "reference standard" that the staff would use to impose a change at time of renewal. Mr. Malsch stated,

... regardless of how you come out on applicable regulations, there is still the opportunity in theory, at the certification renewal stage, to add safety increments above whatever applicable regulations would otherwise require.

In other words, Part 52 currently allows the NRC to impose changes on the design certification at time of renewal so long as the changes (1) provide a substantial increase in protection and (2) are cost justified. The staff may impose such changes without regard for the regulations applicable and in effect at the time of design certification. Thus it is not necessary to codify the proposed additional "applicable regulations" in order for the staff to impose cost-justified changes at time of renewal.

6. **Clarify the options for Commission resolution of the issue of the scope of NRC review at time of certification renewal.** (Tr. p. 89).

The August 13 options paper identified three alternatives for Commission consideration on the issue of the scope of NRC staff review for design certification renewal. Based on the clarifications and discussion from the August 27 briefing, we believe that the Commission has the following options for addressing this issue (which differ somewhat from the three options characterized by the NRC staff):

- **Option 1** - Include a provision in the design certification rules, with appropriate explanation in the Statements of Consideration, establishing the framework for NRC review of design certification renewal applications. This framework would provide for NRC review of the following, subject to the backfit provisions of Section 52.59:
 - updates of the design certification that are part of the renewal application
 - any modifications proposed by the applicant, including relevant operating experience or other material new information since the time of the original certification
 - any modifications proposed by the NRC
- **Option 2** - Do not include a provision in the final rules but describe in the Statements of Consideration the framework outlined under Option 1 to capture current industry-NRC agreement concerning NRC review at renewal and to provide a basis for development of appropriate regulatory guidance on the certification renewal process.
- **Option 3** - defer resolution of the scope of renewal review issue in a manner that does not prejudice its future consideration

Option 1 is preferred because it would establish in the regulations the policy focus for subsequent implementation. It is understood that detailed regulatory guidance concerning the scope and content of applications for design certification renewal would be developed at a later date. We intend to propose revised rule language for implementing this option for NRC consideration.

Based on the industry-NRC staff agreement on the nature of the renewal review, we believe that, at a minimum, the Commission should describe the agreed-upon principles and the policy concepts underlying them in the Statements of Consideration (Option 2). While deferral (Option 3) is an option available to the Commission, we see no reason why principles governing the framework for the renewal review should not be established in the final rules and/or Statements of Consideration.

7. What is the status of the NRC review of the technical specifications and operational-related requirements specified in the DCDs?
(Tr. pp. 77, 81-83).

At the Commission meeting on August 27, 1996, the NRC staff stated that the technical specifications and operational-related provisions in the DCD should not have protection under Section 52.63 because the staff's review of the technical specifications and operational-related provisions is not complete. As support for their opinion, they referred to information in brackets in the technical specifications.

Notwithstanding NRC staff statements that certain aspects of their design certification reviews were not complete, the NRC staff reviewed the technical specifications and a number of operational-related provisions in the DCD and approved them in the Final Safety Evaluation Report (FSER). For example, the FSER for the ABWR has the following conclusions regarding the technical specifications and specific operational-related provisions:

- Technical Specifications – Section 16 of the FSER states that “the ABWR TS satisfy 10 CFR 50.36 and are acceptable.”
- Initial Test Program – Section 14.2 of the FSER states: “The staff also conducted an in-depth review of system-specific testing requirements within each test abstract. The staff concludes that GE provided a sufficient level of detail to adequately describe system-specific test prerequisites and acceptance criteria.”
- Inservice Test Program – Section 3.9.6 of the FSER states: “Based upon the evaluations described above, the staff concludes that the pump and valve IST program described in the SSAR is acceptable and meets the requirements of GDC 37, 40, 43, 46, and 54 and 10 CFR 50.55a(f).”
- Shutdown Risk – Section 19.3.7 of the FSER states: “The staff finds that improvement in safe operation of the ABWR plant in low-power and shutdown modes can be reasonably accomplished by implementing GE's guidelines for preparing and implementing an outage plan. It concludes that GE has adequately addressed important areas described in NUREG-1449 regarding outage planning and control. The staff also notes that specific shutdown TS requirements and guidelines for preparing and implementing an outage plan will significantly improve safe shutdown operation.”

As the staff has noted, the DCDs do not address all information that must be included in the technical specifications or all operational provisions. For example,

the technical specifications contain information in brackets that must be updated based upon as-built plan information, and the DCD contains numerous COL license information items for operational matters that must be addressed by COL applicants. Both the information in the brackets in the technical specifications and the matters subject to COL license information items will be subject to review and approval by the NRC at the COL stage and are not subject to the finality provisions in Section 52.63. However, to the extent that a matter is addressed in the DCD, including the technical specifications in Tier 2, such matters have been approved by the NRC, and therefore backfits should be strictly controlled. We intend to propose rule language that responds to the NRC staff concerns expressed in the August 13 options paper and August 27 briefing.

It is worth noting that replacement of bracketed information with specific entries for the technical specifications will, as noted by the staff, depend on as-built information. As such, combined licenses (which will be issued prior to plant construction) will necessarily contain bracketed information, just as the DCD technical specifications do. Therefore, the fact that the DCD technical specifications contain bracketed information does not mean that the technical specifications are not otherwise complete or that they should not otherwise have finality.

8. Are "applicable regulations" needed so that the NRC would not be compelled to grant an exemption from a design feature that is subject to an "applicable regulation?" (Tr. pp. 73, 91).

At the Commission briefing, Mr. Russell and Mr. Malsch implied that "applicable regulations" are needed in order to permit the NRC to deny a licensee exemption request for a feature that is subject to an "applicable regulation." As an example, they stated that, absent "applicable regulations," the NRC would be compelled to grant an exemption to allow coping to address station blackout (which is allowed by Section 50.63) even though the relevant "applicable regulation" allows only for alternate AC. We do not believe this to be so, as discussed below.

Each of the "applicable regulations" is addressed in whole or part in Tier 1 of the DCDs, which will itself be part of an NRC regulation - - the design certification rule. Specifically, the requirements for alternate AC are contained in Tier 1. If an applicant or licensee desires to use coping rather than alternate AC, it would be required to seek an exemption from Tier 1 because Tier 1 is part of the design certification rule. Contrary to statements at the briefing, the NRC is not required to grant an exemption from Tier 1 merely because the exemption complies with the technical standards in Part 50 (such as the coping provision in Section 50.63). Instead, Section 52.63(b)(1) allows an exemption from Tier 1 only if the exemption satisfies Section 50.12, and if the "special circumstances which Section 50.12(a)(2) requires to be present outweigh any decrease in safety that may result from the reduction in standardization." Furthermore, it is clear from the Statements of Consideration for Part 52 (54 Fed. Reg. at 15377) that the criteria in Section 50.12 (including the criterion for "special circumstances") are applied against the design certification rule itself, not just the provisions in Part 50.

Therefore, in determining whether to grant an exemption from Tier 1 to allow coping rather than alternate AC, the NRC would have to determine whether "special circumstances" exist for the deviation from the requirement for alternate AC. The mere fact that the exemption complies with the coping provisions in Section 50.63 would not be sufficient, in and of itself, as a basis for granting the exemption. In making this determination, the NRC could consider a myriad of factors, including the technical positions in SECY-90-016 and 93-087 that led to the Tier 1 provision on alternate AC.