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The Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
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DOCKET NUMBER  
PROPOSED RULE **PR 52**  
(60FR17902)

8

**ATTENTION:** Docketing and Service Branch

**SUBJECT:** Proposed Rules, Standard Design Certification of the U.S.  
Advanced Boiling Water Reactor and System 80+ Designs;  
60 Fed. Reg. 17902 and 17924; April 7, 1995; Docket Numbers:  
52-001 and 52-002

On behalf of the nuclear power industry, the Nuclear Energy Institute (NEI)<sup>1</sup> is providing these comments in response to the subject NRC Notices of Proposed Rulemaking (NPRs). The industry comments are organized as follows: Attachment A is an Executive Summary; Attachment B provides detailed comments; and Attachment C provides responses to the Specific Requests for Comments contained in Section IV of the NPRs. Because the provisions in the two proposed rules are substantively identical, we are providing a single set of comments applicable to each of the proposed rules.

These design certification rulemakings mark the most significant milestone thus far in the implementation of the NRC's new nuclear plant licensing process -- 10 CFR Part 52 -- the process the U.S. nuclear power industry is relying on to facilitate licensing and construction of a new generation of nuclear power plants. In response to this major licensing reform initiative by the NRC, the industry has put forward, and the NRC has given its final design approval for, the two world-class plant designs that are the subject of these first-ever design certification rulemakings.

<sup>1</sup> NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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The achievement of this milestone reflects the investment of enormous resources and efforts by the design certification applicants and the broader nuclear industry, as well as the NRC staff, the ACRS and the Commission. This investment of human and financial resources has paid off handsomely in the form of successful resolution of innumerable issues that has ensured the enhanced safety of these standard designs. The goal of safer, more reliable new nuclear plant designs has been emphatically achieved.


Unfortunately, however, these NOPRs contain significant process deficiencies which, if not corrected with issuance of the final design certification rules, will threaten the commercial viability of these outstanding designs and the realization of the goals of Part 52. The process deficiencies in the NOPRs, together with specific recommendations for correcting them consistent with the goals of Part 52, are described in Attachments A and B of our comments.

Because these comments address issues that can be resolved by the Commission without a hearing, NEI is not requesting an informal hearing on these comments pursuant to Section V.B of the NOPRs. However, if the Commission, at the request of another party, decides to hold a hearing related to an issue raised herein, we reserve the right to request to participate in such a hearing to represent the interests of the nuclear power industry.

We urge the Commission to carefully consider the recommendations for correcting the process deficiencies inherent in the NOPRs to ensure the workability of the Part 52 licensing process and the achievement of its stated goals.

We appreciate the opportunity to comment on the proposed design certification rules. If you have any questions regarding our comments or recommendations, please call Ron Simard, Russ Bell or me.

Sincerely,



William H. Rasin

Attachments



## ATTACHMENT A

# EXECUTIVE SUMMARY OF INDUSTRY COMMENTS ON PROPOSED DESIGN CERTIFICATION RULES

### ABSTRACT

The industry and the NRC can be extremely proud of the General Electric Advanced Boiling Water Reactor (ABWR) and ABB/Combustion Engineering System 80+™ Standard Plant (System 80+) designs that are presently the subject of the first-ever design certification rulemakings. In approving the safety of these designs, the NRC staff concluded that the designs are "robust," are "an improvement over existing designs," and "meet the Commission's safety goals by several orders of magnitude." The pending design certification rules will be cornerstones of the NRC's new nuclear plant licensing process, 10 CFR Part 52. The Notices of Proposed Rulemakings (NOPRs) for these design certifications, including the referenced design control documents and other docketed materials, represent the culmination of enormous efforts and resources invested by the NRC, DOE, the design certification applicants and the broader nuclear industry to achieve resolution of literally thousands of individual safety issues. The goal of safer, more reliable nuclear plant designs has been emphatically achieved.

Unfortunately, these NOPRs contain significant process deficiencies which, if not corrected with issuance of the final design certification rules, will threaten the economic viability of these outstanding designs and the realization of the goals of Part 52. As observed by the Commission in their Staff Requirements Memorandum on SECY-95-023, "it is important that the potential COL applicants perceive the [Part 52] process to be workable from this point forward." At this point, based on the NOPRs, our perception is that the process would not be workable, would not achieve the goals of Part 52, and, in short, would not be used. It is imperative that the Commission correct the significant process deficiencies described below and in Attachment B so that the goals of Part 52 can be achieved. These deficiencies do not involve issues of public health and safety - - they are solely process-related. Accordingly, and because the industry's recommendations for correcting these deficiencies are fully consistent with the language and goals of Part 52, we strongly urge the Commission to adopt these recommendations to ensure the workability of the Part 52 licensing process and the achievement of its stated goals.

Summaries of the process deficiencies of the NOPRs and associated industry recommendations are set forth below following a brief overview of the purpose and goals of Part 52 which provides important context for their consideration.

## Executive Summary

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## Introduction and Overview

In the 1980s, the NRC recognized that a new approach to the licensing and regulation of nuclear power plants was warranted to correct the problems inherent in the Part 50 licensing process - - a process costly to utilities and their rate-payers and one which had become an obstacle to new orders for nuclear power plants in this country. Under Part 50 licensing, issues decided during the construction permit stage were subject to re-review and re-litigation at the operating license stage. Furthermore, under the Part 50 process, there was too low a threshold for imposition of NRC backfits on approved plant designs during construction and operation. These flaws in the Part 50 process have been the source of substantial licensing uncertainty and tremendous escalation in the cost of constructing and operating nuclear plants. Moreover, the Part 50 process was a disincentive for the development and use of standardized advanced designs - - which both the NRC and the industry believed to hold the promise of increased safety, reliability and economy.

In a major licensing reform initiative, the NRC added 10 CFR Part 52 to its regulations to provide for issuance of early site permits, certification of standard designs, and issuance of combined construction permits and operating licenses (COLs). Under Part 52, safety issues are resolved prior to construction and are not open to re-review or re-litigation in subsequent proceedings. A fundamental objective of Part 52 was the establishment of a licensing process that would encourage and accord regulatory benefits for the development and use of standard plant designs.

As stated in the Notices of Proposed Rulemaking (NPRs) for design certification of the ABWR and System 80+ standard designs, work has been underway for years to develop design certification rules that will further the

Commission's goals for Part 52. Specifically, the NOPRs state that design certification rules seek to achieve (1) the early resolution of safety issues, (2) enhanced safety and reliability of future nuclear power plants, (3) a more predictable and stable licensing process, and (4) standardization of future plants. It should be noted that these goals apply more broadly to the whole of the Part 52 licensing process, not just to design certification.

Subsequent to the promulgation of Part 52, Congress underscored and reinforced the basic objectives and principles of Part 52 in the Energy Policy Act of 1992 (EPACT). This legislation provides an explicit statutory basis for the licensing process embodied in Part 52 and confirms important aspects of the Commission's licensing authority. Subsequent to the EPACT, the NRC amended Part 52 to bring it into conformance with the specific provisions of the legislation.

In describing the legislative approach to the new licensing process, the Senate Energy and Natural Resources Committee cited testimony underscoring that the previous (Part 50) licensing process,

... with its lack of pre-construction finality and enormous costs associated with resolving design issues after construction was complete, stood as an obstacle to the development and use of pre-approved standard designs.

The report of the Senate Committee concluded that "requiring resolution of all important safety issues and establishing the licensing criteria against which the plant will be judged in the combined license before construction begins will have several major benefits." These benefits of the new licensing process were described as early resolution of safety issues, enhancement of



certainty in the licensing process and the provision of objective standards for regulators to decide if a plant is safe to operate. Senator Bennett Johnston, who introduced the nuclear licensing provisions of the legislation, emphasized in Senate hearings that "[t]he whole idea (of the new licensing process) is to resolve all safety issues before construction begins." Thus, Congress recognized that early resolution of safety issues and licensing predictability are essential to successful implementation of the new licensing process.

The industry is deeply committed to the goals of Part 52, and we believe that the extent to which they are collectively achieved will determine the effectiveness of the new licensing process and the realization of the *U.S. Nuclear Industry's Strategic Plan for Building New Nuclear Power Plants*. These goals provide an essential underpinning for the continuance of nuclear power as a viable generating option in the future energy marketplace.

As the NRC's safety reviews confirm, the ABWR and System 80+ standard designs referenced in the proposed rules provide for substantially safer plants and therefore accomplish one of the Commission's goals for Part 52. The resolution of many complex safety issues associated with the standard plants has resulted in demonstrably improved designs that build upon over 30 years of experience in nuclear plant design and operation. Each of the standard designs contains numerous safety improvements, including features to prevent and mitigate severe accidents. One measure of the enhanced safety inherent in the standard designs is that each satisfies the Commission's safety goal policy by a large margin.

The NOPRs also reflect resolution of certain equally challenging Part 52 process issues, such as the level of detail required for design certification

applications; the two-tier approach; and the definition of required inspections, tests, analyses and acceptance criteria (ITAAC). However, as described below and in our detailed comments in Attachment B, there are significant process-related areas where the NOPRs, if left unaltered, would threaten the economic viability of standardized designs, thus undermining their potential for future use and frustrating the achievement of the stated goals of Part 52.

### **The Commission Should Modify the Proposed Rules to Ensure that the Goals of Part 52 Will Be Achieved.**

#### **1. The Proposed Rules Do Not Provide Sufficient Finality for Resolved Issues and Permitted Changes.**

A principal purpose of Part 52 was to create a more stable and predictable regulatory environment by resolving safety issues during design certification such that these issues are not subject to re-review or re-litigation in later licensing proceedings. In other words, safety issues associated with the standard designs are to be resolved with "finality." In this regard, Section 52.63 states that "the Commission shall treat as resolved those matters resolved in connection with the issuance or renewal of a design certification."

In contrast with the goals of Part 52 and the encompassing language in Section 52.63, the proposed rules provide that only those nuclear safety issues associated with information in the Final Safety Evaluation Report (FSER) or Design Control Document (DCD) have finality. While these two documents contain an extensive amount of design information, there is significant additional design information that was resolved during the NRC staff's

extensive safety reviews that is not encompassed by these documents. We strongly believe that this additional design information - - and all matters within the scope of the standard designs - - must also be accorded finality by design certification rulemaking, consistent with the Part 52 goals of early issue resolution and licensing predictability and stability.

As an example of the inadequacy of the NOPR provision on issue resolution, the sufficiency of the standard designs, i.e., the lack of need for additional safety features, would not be among the matters "resolved in connection with" design certification. Likewise, the NOPRs would not accord finality to information contained in the applicant's Standard Safety Analysis Report (SSAR) that is not also contained in the design control documents to be incorporated by reference in the design certification rules. This would fail to provide finality for extensively reviewed and approved proprietary and safeguards information in the SSARs (which is subject to public comment and hearing as part of the rulemaking process) as well as requirements that are contained in codes, standards, topical reports and other documents referenced in the DCDs.

In the extreme, the NOPR's limited view of finality would leave open the door to later challenge of the adequacy of the standard designs - - an untenable situation that Part 52 is intended to preclude. For example, a claim could be made in a combined license proceeding that an additional design feature not previously considered by the NRC, e.g., an additional containment barrier, was necessary and that a time consuming, costly, formal evaluation was warranted. At the very least, the NOPRs' too narrow characterization of issue resolution would cause a substantial amount of design information previously approved by the NRC staff to be subject to re-review and re-litigation - - in direct conflict with the original intent of Part 52 to alleviate the uncertainty associated with the need to consider such matters a second time.

To ensure the viability of the Part 52 licensing process, finality must be provided to a substantially broader scope of matters than those described in the proposed rules. Finality must be accorded to all matters within the scope of the approved designs, i.e., only site specific matters should be open to consideration by the NRC staff or third parties in a license proceeding. We think it is self evident that the following must be considered resolved within the meaning of 10 CFR 52.63(a)(4) in any subsequent proceeding:

- all issues related to the adequacy of the standard design;
- all matters resolved on the rulemaking docket, including all matters discussed in the applicant's SSAR or raised in the design certification rulemaking proceeding

In addition, we believe that issue resolution and finality accorded through design certification rulemaking, as described above, is undiminished by changes made in accordance with the change processes specified in the design certification rules. This includes changes made in accordance with the § 50.59-like process that is incorporated in Section 52.63(b) and Section 8(b)(5) of the NOPRs. However, under the proposed rules, changes made via the § 50.59-like process would not be final and would be subject to an opportunity for hearing. Such a hearing right would mark a significant departure from existing practice under Section 50.59 - - which the Commission endorsed as a model for the analogous "§ 50.59-like" process under Part 52 - - and should not be provided.

In summary, the Commission should clearly state in the final design certification rules that the broader scope of matters described above, as well as changes made in accordance with the change processes specified in the design certification rules, shall be considered resolved within the meaning of § 52.63(a)(4) in all subsequent licensing proceedings.



## **2. New "Applicable Regulations" Are Unnecessary and Will Create the Potential for Destabilizing Backfits.**

SECY-90-016 and SECY-93-087 identified a number of NRC positions on severe accident and other technical issues that are not embodied in current NRC regulations. The design certification applicants voluntarily agreed to provide design features corresponding to these positions. Nevertheless, the NOPRs propose that the design certification rules designate more than a dozen of these severe accident and technical positions as "applicable regulations" - - to give them a status similar to the Commission's regulations in Part 50. The stated purpose for the proposal is to identify standards for the issuance and renewal of the design certifications, control changes to the DCD, and to provide a means for NRC to impose backfits on the design certifications and future licensees. As discussed below, these additional "applicable regulations:"

- are unnecessary for the purposes identified by the staff;
- are duplicative of requirements stated in the design certifications;
- are, in some cases, directed at the operational programs of license applicants, which are clearly beyond the scope of the standard design certifications;
- add undue complexity and uncertainty to an already intricate licensing process; and most importantly,
- create the potential for destabilizing backfits

Moreover, the "applicable regulations" are not justifiable on a stand-alone basis and do not meet required statutory and regulatory criteria.

There is simply no need for creating a free-standing collection of "applicable regulations" to address the NRC's positions. Each of the NRC positions is addressed in the DCD in a manner that has been approved by the NRC staff.

The design certification applicants are not requesting that any of these provisions in Tier 1 or Tier 2 be modified. Thus, there is no need to establish "applicable regulations" for these positions in order to ensure that the standard designs conform with these positions. In essence, the NRC staff proposal for "applicable regulations" singles out and penalizes the advanced reactor designs for incorporating, consistent with utility requirements and Commission guidance, features that provide increased margins of safety. As a matter of regulatory policy, it would be incongruous and inappropriate to encumber plants - - that are acknowledged to provide important safety enhancements in relation to existing reactor designs - - with an additional layer of "applicable regulations."

Furthermore, as integral requirements of the design certifications, the design provisions in the DCD become part of an "applicable regulation" - - the design certification rule itself - - for all of the purposes identified by the staff, namely, (1) they will govern issuance of the design certification rule, (2) they will constitute "applicable regulations" in the sense that a licensee may be compelled by the NRC to comply with these provisions, and (3) they will comprise part of the regulatory base for making design certification renewal determinations.

Additionally, because all of these technical positions are implemented in whole or part by provisions in Tier 1, as well as Tier 2, these technical positions need not be designated as "applicable regulations" to ensure that sufficient controls will exist to prevent an applicant or licensee from deviating from the NRC's technical positions.

In addition to being unnecessary and inappropriate as discussed above, our most acute concern with the staff proposal is that these "applicable regulations" could be used in the future by the NRC staff to impose

unwarranted backfits on applicants and licensees. Under Part 52, the NRC cannot make a generic or plant-specific change in Tier 1 or Tier 2 unless the change is necessary for the adequate protection of public health and safety or "compliance with the Commission's regulations applicable and in effect at the time the certification was issued." By designating certain technical positions as "applicable regulations," the proposed rules would create the potential for "compliance" backfits in Tier 1 and Tier 2, e.g., to reflect changes in the NRC staff interpretations of these technical positions or in the body of knowledge on a particular severe accident phenomenon.

The potential for backfits based on noncompliance with "applicable regulations" is especially troublesome for two reasons. First, the staff has intentionally used "broadly stated" language in drafting the proposed "applicable regulations," making them particularly susceptible to new and diverse interpretations. And second, many of the proposed "applicable regulations" address severe accident issues about which new information and analysis techniques are continuously being developed through various research programs. Licensing uncertainty is created by the potential that the NRC staff may, based on new information on a particular severe accident phenomenon, at some future time conclude that the codified standard designs are no longer in strict compliance with an "applicable regulation."

As discussed in Section II of Attachment B, none of these industry comments should be construed to suggest that the flawed concept of "applicable regulations" can be fixed by changes to their wording. Because the proposed "applicable regulations" are unnecessary and would give rise to the potential for unwarranted and destabilizing backfits, the Commission should not include "applicable regulations" in the final design certification rules.

**3. The Design Certification Rules Should Contain a Provision To Ensure that NRC Will Have a Stable and Predictable Process for Making its Finding that the ITAAC Have Been Met.**

As required by Part 52, each of the proposed design certification rules contains inspections, tests, analyses and acceptance criteria (ITAAC) for use in determining that a plant has been built in conformance with the certified design. As stated in Part 52, these design certification ITAAC, together with associated site-specific ITAAC in the combined license (COL), must be sufficient to provide reasonable assurance that a plant has been constructed and will be operated in conformity with the license, the Atomic Energy Act and the Commission's rules and regulations. Satisfaction of ITAAC acceptance criteria provides the sole basis for the Commission finding required by Section 52.103(g).

As described in the Senate Energy and Natural Resources Committee Report on the Energy Policy Act of 1992 (EPACT), the purpose of the new licensing process, and ITAAC in particular, is to "enhance certainty for the utility building the plant by spelling out before construction begins what conditions the completed plant must satisfy in order to operate." The same Committee Report further describes this purpose as to "provide NRC regulators objective safety standards (i.e., acceptance criteria) with which to measure the constructed plant in deciding whether the plant is safe to operate." Similarly, as the NRC staff stated in SECY-91-178, "[t]he benefits to the early designation of these [ITAAC] verification requirements include an up-front agreement to requirements and acceptance criteria" for the constructed plant.



The purpose and intent of ITAAC is thus clearly established by Part 52, the EPACT and various Commission papers. However, the manner in which the NRC staff is to verify that ITAAC are met is not specified. While we recognize that the details of an ITAAC implementation process will be the subject of future discussion, the nature of the NRC verification of licensee ITAAC determinations has recently become a significant industry concern based on SECY-94-294, "Construction Inspection and ITAAC Verification," and preliminary discussions with the NRC staff. In particular, these interactions have raised industry concerns that, in determining whether ITAAC have been satisfied, the NRC staff contemplates broad-ranging evaluations of quality assurance activities, e.g., adequacy of installation, training and test procedures, adequacy of procurement documentation, etc. NRC verification of these and other important process and program activities will be via traditional inspection and enforcement of licensee quality assurance program implementation. Such broad-ranging evaluations would be inappropriate in the ITAAC context because they would be contrary to the purpose of ITAAC and to the focus of the acceptance criteria on the end-products and results of construction.

Because of the potential for impact on construction plans and schedules and the scope of the post-construction hearing, effective and timely ITAAC verification is as critical to the overall process as the precise delineation of ITAAC in these design certification rules. Accordingly, we recommend that the Commission use the opportunity presented by these design certification rules to define the nature of the NRC verification of licensee ITAAC determinations, consistent with the established purpose of ITAAC.

Doing so will:

- clarify the Commission intent with respect to ITAAC verification, consistent with the objective of establishing up-front the acceptance criteria to be met by the constructed plant,
- establish a basis for development of a focused, effective and workable ITAAC implementation process,
- instill industry, investor and public confidence in the practical implementation of ITAAC and thus in the predictability and cost-effectiveness of the new licensing process

Specifically, we urge the Commission to include provisions within the design certification rules to clearly specify that compliance with ITAAC shall be determined by verifying that the required inspections, tests, and analyses have been performed, and that, based solely on the successful completion thereof, the corresponding acceptance criteria have been satisfied. This would provide focus and stability to the ITAAC process without diminishing the NRC's Part 50 inspection and enforcement authority as it relates to evaluation of quality assurance activities, including effective identification and correction of deficiencies.

#### **4. The Proposed Consideration of Severe Accident and Probabilistic Analyses in Section 50.59 Safety Evaluations Is Unnecessary and Unduly Burdensome.**

Under 10 CFR 50.59, a licensee may make changes in its safety analysis report (SAR) without prior NRC approval unless the change involves a change in the technical specifications or an unreviewed safety question (e.g., an increase in probability or consequences of an accident evaluated in the SAR).

Traditionally for Part 50 plants, § 50.59 evaluations have applied only to evaluations of design basis accidents.

However, the Design Control Documents (DCDs) for the standard plants contain requirements for severe accident features and associated deterministic and probabilistic analyses. The Commission has directed that the § 50.59-like process preserve severe accident insights, and the industry has fully supported this direction.

Unfortunately, the § 50.59-like change process in the proposed rules is far in excess of what is needed and appropriate for accomplishing the Commission's objective. The NOPRs prescribe an evaluation scope that is unnecessarily broad and would be enormously burdensome on applicants and licensees. The proposal would require that § 50.59 safety evaluations consider all of the extensive severe accident analyses and PRA results contained in Chapter 19 of the DCDs when determining whether the change constitutes an unreviewed safety question. Furthermore, the proposed rules provide that a change in the severe accident evaluations or PRA results in Chapter 19 would constitute an unreviewed safety question if the change would increase - - even insignificantly - - the probability of occurrence or the consequences of a severe accident evaluated in Chapter 19. Section 8(b)(5) of the proposed rules contains only one limited exception: that changes to Section 19E of Tier 2 for the ABWR and to Section 19.11 for the System 80+ (including associated appendices) would constitute an unreviewed safety question only if there is a "substantial increase" in the probability or consequences of the severe accidents evaluated in the section.

Instead of applying the § 50.59-like process to all of Chapter 19, we propose that, (1) the process be applied only to those sections that identify features that contribute significantly to the mitigation or prevention of a particular accident sequence or event scenario (i.e., Section 19.8 for the ABWR and Section 19.15 for the System 80+), and (2) changes should constitute

unreviewed safety questions only if they would result in a substantial increase in the probability or consequences of a severe accident. This alternative approach would effectively preserve severe accident insights in the standard designs, consistent with Commission guidance, while not requiring that undue emphasis and resources be applied to matters of little or no safety significance.

The Commission should reject the NOPRs' excessive proposal for consideration of severe accident and PRA information in the § 50.59-like process. For one thing, the stated purpose of the NOPR proposal is to maintain the resolution of (i.e., regulate) severe accident issues on par with design basis issues. The proposal disregards the significant differences between severe accident and design basis analyses in terms of their inherent safety significance and uncertainties. The Commission has consistently rejected the notion that such regulation over severe accident matters is necessary and should do so once again.

More importantly, the proposal to consider all of Chapter 19 would drastically increase the burden on licensees with respect to § 50.59 safety evaluations - - while providing no commensurate improvement in safety. The excessive and life-long regulatory burden inherent in the NOPR proposal would effectively single out and penalize applicants and licensees for referencing a standard design that has evaluated severe accidents. At a time when the NRC and most other Federal agencies are trying to reduce regulatory burdens that have little or no benefit to safety, it would be totally inconsistent to burden applicants and licensees with a requirement to perform safety evaluations for changes that have little or no potential for affecting safety.



**5. The Design Certification Rules Should Allow the Design Certification Applicant to Make § 50.59-Like Changes After Design Certification.**

In the several-year period which may pass before the first license application is submitted for a standard design, the detailed designs will be developed by or with the cooperation of the design certification applicants. As a result of detailed design development, including the incorporation of relevant operating experience and technological advances, design changes are likely to be identified. We believe there would be substantial benefits to standardization, economy, and regulatory efficiency if the design certification rules were to include a process by which the design certification applicant could make generic § 50.59-like changes to Tier 2 of the DCD after the design certification rule is approved and before the first license application referencing the rule is filed. It should be emphasized that the envisioned process could be used for making generic Tier 2 changes only after a safety evaluation concludes that the change would not involve an unreviewed safety question, and thus would not be adverse to safety.

Revising the proposed rules to provide for such changes by the design certification applicant would have several important benefits. First, it would promote the goal of standardization because such changes would be generic and, therefore, applicable to all license applicants and licensees that reference the design certification. Second, the process would be economical, since only one § 50.59 change for all plants (rather than a § 50.59 change for each plant) would have to be processed. Finally, this process would also ease the administrative burden on the NRC because the NRC would have to review a qualifying change only once, rather than repetitively for each license application.

**6. The Substantive Provisions in the DCD Introduction Should Be Incorporated into the Design Certification Rules.**

The introductory section of the DCD contains numerous substantive provisions reflecting resolution of issues related to the future use of the DCD by applicants and licensees. Unfortunately, and for reasons unstated, the NOPRs do not propose that the DCD Introduction be incorporated by reference into the design certification rules. Instead, the Statements of Considerations (SOC) for the NOPRs imprecisely paraphrase certain of the substantive provisions, while ignoring others, and relegating the entire DCD Introduction to the status of explanatory information subservient to the SOC.

It is not clear why the NOPRs propose to accord no legal status to the DCD Introductions. The industry devoted extensive resources to interactions with the NRC (including Office of General Counsel) staff in late 1993 and 1994 aimed at documenting clear, precisely worded resolutions of the remaining substantive issues associated with the DCD (e.g., the relationship between Tiers 1 and 2, the status of proprietary information, applicability of ITAAC, etc.). These resources were spent based on the mutual understanding and expectation that the DCD Introductions would be made part of the design certification rules along with the rest of the DCD, as indicated by the following NRC staff guidance provided to each applicant dated August 26, 1993:

The staff believes that the DCD should be a self contained document and should not rely on the DCR's [Design Certification Rules] Statements of Consideration to serve this purpose. It is not expected that future users of the DCD be required to research the Statements of Consideration to gain an understanding of the purpose of the DCD and its role in future licensing actions.

Given the extensive interactions (including NRC approval of the language for the DCD Introductions), the clear understanding that DCD Introductions would be included in design certification rules, and the importance of clear, binding resolution of the issues in question, the proposal in the NOPRs is, to say the least, inappropriate. We request that the Commission accord the substantive provisions of the DCD Introductions the status of rulemaking requirements, preferably by incorporating the DCD Introductions by reference in the design certification rules for the respective design certifications.

### Other Important Issues Addressed in Attachment B

Implementation of the Change Process - Industry recommendations are provided on four additional issues arising from the NOPR related to implementation of the Part 52 change process.

- Section III.H of the NOPR Supplemental Information incorrectly states that prior NRC staff approval is required for a departure from Tier 2 information via the § 50.59-like process "if the change involves issues that the NRC staff has not previously approved" or "if changes were made to the DCD that violated the [NRC's] resolutions without NRC approval." These statements are inconsistent with Section 52.63, proposed Section 8(b)(5)(i), Section 50.59 and long-standing NRC practice.
- Exemptions should not be required for changes to technical specifications or changes to Tier 2\* information that do not involve an unreviewed safety question.
- Quarterly reporting of Section 50.59 changes during construction is unnecessary and overly burdensome.
- Contrary to statements in the NOPR, Section 52.63(b)(2) provides the basis for the Tier 2 change process, and this section should not be deleted in a possible future amendment to Part 52.

**Expiration of Tier 2\* Restrictions** - We request that Tier 2\* change restrictions (i.e., the requirement for prior NRC staff approval for changes involving information designated Tier 2\* in the DCDs) expire when the plant first goes into full power operation. Tier 2\* restrictions are not needed after the plant is completed because Tier 2\* information pertains to methodologies for completing the plant design.

**Control of Changes to Technical Specifications** - Operation of future plants must be governed by a single, integrated set of technical specifications that are controlled by the single process provided by 10 CFR 50.90. Operators must not be faced with separate standard plant and site-specific technical specifications that are controlled by differing change mechanisms.

**ITAAC Applicability Under Part 50** - We request that the Commission reject the NOPR proposal that ITAAC be required under Part 50 licensing because ITAAC are unique to Part 52 and because Part 50 has other means for accomplishing the purpose of ITAAC.

**Important Clarifications** - We request that the final design certification rules clarify certain other important issues.

- Potentially misleading statements in the NOPRs regarding the status of references in the DCD should be clarified
- Misleading statements in the NOPRs regarding PRA information required to be submitted with COL applications should be corrected
- Other clarifications

## Conclusion

Each of the perceived NOPR flaws discussed in this Executive Summary is described in more detail in Attachment B, along with a discussion of how each of the NOPR proposals in question is inconsistent with the Commission's goals for Part 52. Specific recommendations and proposed rule language for correcting the NOPR process deficiencies consistent with the goals of Part 52 are also provided.

In closing, we must emphasize that use of design certification rules and Part 52 is not mandatory. If potential purchasers of new electrical power plants do not perceive that the design certification rules will accomplish the goals of Part 52, they simply will not consider the nuclear option to meet their needs. In such an event, all of the industry's and NRC's efforts will have amounted to nothing more than a costly exercise. Because the disputed NOPR proposals do not involve issues of public health and safety, and because the industry's recommendations and proposals are fully consistent with the language and goals of Part 52 and the Energy Policy Act, we urge the Commission to carefully consider these comments and adopt the recommendations herein to ensure the workability and viability of the Part 52 licensing process.



August 4, 1995

**ATTACHMENT B**

**DETAILED INDUSTRY COMMENTS  
ON THE  
PROPOSED DESIGN CERTIFICATION RULES  
FOR THE ADVANCED BOILING WATER REACTOR  
AND THE  
SYSTEM 80+™ STANDARD PLANT**

## ATTACHMENT B

### DETAILED COMMENTS ON PROPOSED DESIGN CERTIFICATION RULES

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ATTACHMENT B  
DETAILED COMMENTS ON PROPOSED  
DESIGN CERTIFICATION RULES

I. Finality of Issue Resolution

A. Introduction

A principal purpose of Part 52 is to create a more stable and predictable regulatory environment by resolving safety issues during design certification such that these issues have finality in later licensing proceedings (*i.e.*, are not subject to re-review by the NRC or re-litigation in public hearings). In this regard, 10 CFR 52.63(a)(4) states that "the Commission shall treat as resolved those matters resolved in connection with the issuance or renewal of a design certification." The Notices of Proposed Rulemaking (NPRs) for the design certification of the ABWR and System 80+ deviate from both Part 52 and from traditional civil and administrative standards used to bar re-litigation of substantially similar issues in subsequent inquiries.<sup>1</sup> Specifically, the NPRs finality provisions are inadequate and inappropriate because:

- The scope of issues accorded finality is too narrow;
- Changes made in accordance with the change process are not accorded finality;
- The rule does not specifically provide for finality in all subsequent proceedings; and
- The finality proposals do not promote, and are inconsistent with, the goals of Part 52.

---

<sup>1</sup> This provision in Part 52 is not inconsistent with standards typically applied in judicial and administrative forums using the doctrine of collateral estoppel, which bars re-litigation of disputed issues which were both previously resolved in and essential to a prior administrative decision on the issue. *See, e.g., United States v. Utah Constr. & Mining Co.*, 384 U.S. 394, 422 (1966); *Parklane Hosiery Co. v. Shore*, 439 U.S. 322, 326 (1979); *University of Tennessee v. Elliott*, 478 U.S. 788, 798 (1986); *Astoria Federal Savings & Loan Assoc. v. Solimino*, 501 U.S. 104, 108-109 (1991).



The design certification process has been a long and complex one involving the resolution of substantial numbers of issues in numerous different forums. For example, each design certification applicant submitted an application which included a multi-volume standard safety analysis report (SSAR) developed over a many year period. Based upon the SSAR, amendments to the SSAR, and the applicant's responses to numerous requests for additional information, the NRC staff and the Advisory Committee on Reactor Safeguards (ACRS) conducted extensive detailed reviews. Additionally, the design certification applicants prepared Certified Design Material, which includes proposed descriptions of the certified design (i.e., the top-level design criteria and performance standards taken from the SSAR) and inspections, tests, analyses, and acceptance criteria (ITAAC), as required by 10 CFR 52.47. The staff and ACRS also reviewed this material, held numerous meetings with the design certification applicants on this material, and requested additional information. Based on these requests, the design certification applicants submitted amendments to their Certified Design Material and made corresponding changes to their SSARs. Using the results of its reviews, the NRC staff prepared for each design a draft safety evaluation report which identified numerous items to be resolved by the certification applicants. Based in turn on the resolution of these items, the staff prepared a Final Safety Evaluation Report (FSER) and issued a Final Design Approval (FDA) for each standard design.

Finally, at the end of this process, the NRC required each design certification applicant to prepare a Design Control Document (DCD) consisting of the following: 1) an Introduction, which describes the purposes and uses of the DCD; 2) Tier 1, which is equivalent to the Certified Design Material; and 3) Tier 2, which is essentially equivalent to the SSAR, minus proprietary and safeguards information and the details of the probabilistic risk assessment (PRA). The DCD is the master document used to describe the standard design and to control changes to it; however, neither the DCD nor the FSER explicitly addresses all of the issues discussed in the SSAR, in the many meetings held between the design certification applicant and the NRC staff and/or ACRS, or in the tremendous volume of docketed correspondence between the design certification applicants and the NRC. In

contrast with the language of § 52.63(a)(4), Section 6 of the proposed rule provides that only those nuclear safety issues associated with information in the NRC's FSER or DCD (and all environmental issues associated with the information in the NRC's Environmental Assessments (EAs) for the standard designs and the severe accident design alternatives in the associated Technical Support Documents (TSDs) submitted by the design certification applicants) are "matters resolved in connection with the issuance or renewal of a design certification" within the meaning of § 52.63(a)(4). The NOPRs state that other relevant design information, despite having been similarly reviewed and approved by the NRC staff, will not have finality. (See NOPR Section II, Topic 9 and Section III.F; and Section 8(b)(5)(i).) Additionally, the proposed rules would not provide finality for information not in the FSER, DCD, TSD or EA but nevertheless on the docket; to issues addressed and disposed of during the rulemaking proceedings; to matters which the proposed rules establish as license requirements (such as proprietary information in the SSAR and secondary reference requirements); or to other issues necessarily associated with the design certification. Nor would the proposed rules provide conclusiveness as to the sufficiency of various design features unless that sufficiency is spelled out in the DCD (e.g., whether a fifth reactor coolant pump might one day be required).

Limiting finality to such a narrow scope of information is contrary to the Part 52 goal of licensing predictability and stability, to the language in § 52.63(a)(4), and to traditional standards applied in civil and administrative proceedings to bar reconsideration of substantially identical issues. This lack of finality will create the opportunity for multiple NRC staff reviews and hearings on issues already resolved "in connection with" design certification, and therefore threatens the viability of the Part 52 licensing process.

To ensure that Part 52 license proceedings have the viability originally intended by Part 52 and by the Energy Policy Act of 1992, we believe that finality must be provided to a substantially broader scope of matters than those in the proposed rule. Finality must be accorded to all matters within the scope of the approved design, i.e., only site-specific matters should be open for consideration in a license

proceeding. The NRC should not be allowed to impose new requirements within the scope of the standard design unless the stringent backfit requirements of § 52.63(a)(3) are satisfied. Moreover, issues relating to the design should not be allowed to be raised in subsequent licensing and regulatory proceedings. We think it is self-evident, in any event, that all matters on the rulemaking docket, including all matters discussed in the SSAR or raised in the design certification rulemaking proceeding, should be considered resolved in any subsequent proceeding. Finality should also be accorded with respect to the sufficiency of design features specified in the DCD. Our bases for these positions are provided in Section B below. Additionally, changes made with prior NRC approval or in accordance with the § 50.59-like process should be accorded finality, as discussed in Section C below. Lastly, as discussed in Section D below, the rule should be clarified to provide explicitly that finality extends to all subsequent proceedings.

**B. The Scope of Issues Accorded Finality Should Be Expanded**

Section 6 of the proposed rules severely and unnecessarily limits the scope of issues that are accorded finality under § 52.63(a)(4). For example, Section 6 does not give finality to information in the SSAR that is not also in the DCD, or to other issues that are inherently part of the NRC's safety determinations but not explicitly addressed in the NRC's Final Safety Evaluation Report for each design. Furthermore, the NOPRs explicitly state that certain issues, such as secondary reference requirements in the DCD and proprietary and safeguards information, do not have finality. (See NOPR Sections II, Topic 9 and III.F.)

The NRC staff's proposal to limit the scope of issues accorded finality would eviscerate the intended benefits of the Part 52 design approval process. For the reasons discussed below, we believe that the Commission should modify the proposed rule to provide finality to the SSAR (including proprietary and safeguards information), to secondary reference requirements in the DCD, to other matters disposed of on the docket or addressed in the rulemaking proceeding, and to issues inherent in the NRC's safety determination regarding the standard design. In each

case, the sufficiency of both NRC's safety determinations and the standard plant's design features should also be accorded finality.

1. Sufficiency of Design

At the conclusion of the design certification rulemaking process, the Commission is expected to determine that the design features and functions of the standard designs, as described in the final DCDs, meet "the applicable standards and requirements of the Atomic Energy Act and the Commission's regulations. . . ." (See 10 CFR 52.54.) Inherent in these determinations is the conclusion that the standard designs do not need design features and functions beyond those approved in the DCD in order to provide adequate protection of public health and safety. The lack of need for such additional design features and functions should be considered a matter resolved "in connection with" the issuance of the rules.

For example, the DCD for the ABWR discusses inerting the containment and use of drywell sprays to mitigate fires; however, the ABWR DCD does not mention whether there is a need for certain other design features, such as installing a fire suppression system in the containment. Implicit in the NRC's approval of the DCD is the finding that a fire suppression system is not necessary to comply with the Commission's regulations or to provide adequate protection for the public health and safety. Therefore, the lack of need for a fire suppression system in the containment should be considered a matter resolved in connection with design certification of the ABWR. Other issues similarly inherent in the NRC's safety determinations should also be accorded finality.

The fact that certain matters are not discussed in Tier 1 or Tier 2 is not basis for denying such matters finality. As discussed in NOPR Section II, Topic 2, "[a]ll matters covered in each tier, including the determination of what



should be placed in each tier, are subject to public challenge in the design certification rulemaking and any associated hearing." (Emphasis added). Because matters within the scope of the standard design but not discussed in Tier 1 or Tier 2 are subject to challenge and hearing as part of design certification, such matters should also be given finality.

This conclusion regarding the scope of finality derives from 10 CFR 52.63(a), which precludes imposition of new requirements by rulemaking or plant specific order absent a determination of the need to assure compliance with regulations in effect at the time of design certification issuance or to assure adequate protection of safety. In particular, given the restrictions in Sections 52.63(a)(1) and (3), NRC cannot order a plant to add a new structure, system, component or design feature within the scope of the approved design unless the criteria in these sections are satisfied. It follows that the lack of need for such structure, system, component or design feature must also be a matter resolved under § 52.63(a)(4) -- in other words, the scope of design subject to finality under § 52.63(a)(4) should be at least as broad as the scope of design subject to the change restrictions in Sections 52.63(a)(1) and (3). In order to avoid confusion on this point in the future, the Commission should revise Section 6 of the proposed rules to state explicitly that the lack of need for additional design features beyond those provided in the DCDs for the standard designs is a matter resolved under 10 CFR 52.63(a)(4).

## 2. SSAR

For a number of important reasons, information in the SSARs should be treated as "resolved." First, the SSARs each form the central part of the approved dockets for the rulemaking proceedings. The information in the SSARs was reviewed extensively and iteratively by the NRC staff and the ACRS over a several-year period, and, accordingly, the SSARs were re-issued



by the applicants more than two dozen times until finally completed and approved. The content and sufficiency of the SSARs was approved by the NRC staff and ACRS, and by any definition should be considered "resolved" within the meaning of § 52.63(a)(4).

Second, the information in the SSARs forms the basis for the DCD for each design, and was the primary basis on which the NRC staff approved the design in each case. Since both the DCDs and FSERs have finality, and since the SSARs form the primary basis for these documents and are themselves approved by the FSERs, the SSAR information should also be given finality because it identifies matters directly resolved "in connection with" the design certification.

Third, the NOPRs allow members of the public to submit comments and request a hearing on any matter within the scope of the standard designs, which includes all of the information in the SSARs. (See NOPR Section II, Topic 1.) Because the SSARs were reviewed and approved by the NRC and are subject to litigation by the public, the SSARs are entitled to finality by any standard of civil or administrative review.

Finally, information in the SSARs, such as proprietary and safeguards information, that is not also in the DCDs, must nevertheless be addressed in license applications which reference the design certification rule. (See, e.g., ABWR DCD Introduction, Section 3.6). In particular, the industry accepts that the NRC considers proprietary and safeguards information in the SSAR "to be requirements," as stated in NOPR Section III.D. As provided in Section V.E of the NOPRs, members of the public can obtain access to this information subject to appropriate confidentiality provisions. Therefore, it makes little sense, and is contrary to administrative efficiency and the intent of Part 52, not to accord such information finality, thus opening the door to NRC duplicate review of this information during plant-specific licensing.

For all of these reasons, the Commission should revise the proposed rule to accord finality to the SSAR.

### 3. Secondary References

Similarly, material contained in documents which are referenced in the DCD (so-called "secondary references") should be accorded finality where the material in those documentary references is treated as design certification requirements. In particular, Tier 2 of the DCD contains numerous references, including commitments to codes, standards, NRC guidance, and other documents. As stated in NOPR Section III.D., depending upon their context, these references may be requirements for license applicants and licensees. It would be incongruous and inappropriate to impose these references as requirements on license applicants and licensees, but yet deprive them of finality and thereby subject license applicants and licensees to possible further NRC review and hearings on the adequacy and appropriateness of the references that contain requirements. It would also be incongruous and inconsistent with Part 52 to require an applicant or licensee to use § 52.63 to make changes in secondary reference requirements, but to allow the NRC to make changes in the requirements without using the change process in § 52.63.

Because all of the references have been reviewed and approved in their context by the NRC, and because all of the references are subject to public comment and hearing as part of the rulemaking proceedings, they constitute matters resolved "in connection with" the design certification and should have finality in accordance with their stated context. Any other result would open the door for re-review and re-litigation of matters decided during the design certification stage and would require the duplication of resources by all parties, including the NRC.

#### 4. Other Information That Should Be Accorded Finality

Similarly, numerous other issues, many of which are not explicitly identified in the DCDs, FSERs, TSDs or EAs, have been raised and resolved by the NRC staff during the many years of review of the applications for each standard design. These matters are on the docket, are identified in the public record, are part of this rulemaking record, are subject to comment, and may be subject to a request for hearing.

For example, the Advisory Committee on Reactor Safeguards (ACRS) raised a number of issues during its review of the design certification applications that were resolved to the satisfaction of the ACRS (and presumably the NRC staff). Additionally, the NRC staff "Greybeard Committee" raised a number of issues regarding the content of Tier 1 that were later resolved by the staff. In general, these issues are not discussed in the DCD or the FSER, and yet by any reasonable definition were "resolved in connection with" design certification and should have finality under Section 52.63(a)(4).

In many instances, issues were also resolved in one or more of the numerous public meetings between the NRC staff and the applicants over the past several years. Furthermore, it may be expected that the public will raise a number of other issues during the rulemaking proceeding itself, which will be resolved by the Commission. All of these issues are matters resolved "in connection with" the design certification and should be accorded finality to prevent their needless re-review and re-litigation in later proceedings.

#### 5. Summary

In summary, the proposed provisions on finality in the NOPR are unduly narrow, and are contrary to the intent and purpose of Part 52 to provide for early resolution of issues and a stable and predictable licensing process. They do not comport with the language in § 52.63(a)(4) or the traditional principles of civil and administrative review. Section 52.63(a)(4) provides

finality to matters resolved "in connection with" the design certification. Contrary to the NOPRs' proposed provisions, such matters include more than just those matters discussed in the DCDs, the FSERs, TSDs and the EAs. There are numerous other matters that by any reasonable definition have been "resolved" during the course of the design certification proceedings, and these matters should also be given finality.

C. Changes Made In Accordance with the Change Process Should Have Finality

Plant-specific changes by an applicant or licensee, such as changes made with prior NRC approval or those made under 10 CFR 50.59 (which permits changes to be made without prior NRC approval if the change does not involve an unreviewed safety question or a change in the technical specifications), should be afforded finality.

1. Changes Subject to Prior NRC Approval and an Opportunity for Hearing Should Have Finality

All changes to Tier 1, and all changes to Tier 2 or Tier 2\* that involve an unreviewed safety question or a change in the technical specifications, trigger requirements for prior NRC approval and afford an opportunity for a public hearing. Also, as stated in response to NOPR Question 7 in Attachment C, all Tier 2\* changes, regardless of whether an unreviewed safety question exists, are subject to prior NRC staff approval. In spite of these stringent change controls, the proposed rules (NOPR Section II, Topic 2 and III.H) state that such approved and possibly litigated changes in Tier 1 and Tier 2 would not have finality.

We believe that such changes should have finality after they have been approved by the NRC. NOPR Section II, Topic 3, states that the loss of issue preclusion for such changes, "will help minimize the consequences of the loss



of standardization caused by the" changes. This statement is both unsupported and unfounded. The "consequences of the loss of standardization" caused by changes are in fact not reduced by depriving such changes of finality. Indeed, to the extent restrictions on finality cause the industry to avoid authorized changes that may increase the safety or effectiveness of the design, those restrictions may be counterproductive.

Furthermore, we believe such changes should have finality in all subsequent proceedings. There is no safety benefit to be gained, and a great deal of uncertainty and cost to be incurred, in subjecting approved and possibly litigated changes to re-review and re-litigation in subsequent proceedings. Therefore, the Commission should modify the proposed rules to accord finality to changes that have been approved by NRC and were subject to an opportunity for a public hearing. Plant-specific changes would have finality only for the plant in question; other plants that reference the design certification would have to incorporate the same plant-specific change.

At the NRC's public meeting on the proposed rules on May 11, 1995, the NRC's deputy general counsel stated that, although such changes would not have finality under § 52.63(a)(4), they would have whatever finality that attends to the hearing process in question (Meeting transcript, pp. 19-20). We agree that, at a minimum, changes should have the type of finality that would be afforded to changes subject to an opportunity for hearings under Part 50. However, we believe that such finality is not sufficient. For example, greater finality is intended and appropriate under Part 52 than the situation under Part 50 where matters decided in construction permit hearings have no finality in subsequent operating license proceedings, and where the NRC staff is not constrained from imposing backfits on matters decided in those hearings. Therefore, as a matter of policy, the industry urges the Commission to accord finality under § 52.63(a)(4) to changes that are subject to prior NRC approval and an opportunity for a hearing.



2. Changes Made in Conformance with the § 50.59-Like Process Should Have Finality

Tier 2 changes made in accordance with the § 50.59-like process should also be accorded finality. Such changes are explicitly authorized by and are fully consistent with both 10 CFR 52.63(b)(2) and Section 8(b)(5) of the proposed design certification rules. By definition, such changes do not involve an unreviewed safety question and do not require prior NRC review or approval and, under § 50.59, are not subject to an opportunity for hearing by members of the public. Therefore, such changes do not adversely affect the NRC's safety determination for the affected portion of the design and should not be subject to hearing under Part 52. Moreover, affording hearings for changes made in accordance with the § 50.59-like process under Part 52 is directly contrary to the provisions of 10 CFR 50.59 on which it is based.

a. A Hearing Opportunity Should Not Be Provided for All § 50.59-Like Changes

While the NOPRs make no distinction, regarding finality, between Tier 2 changes made before or after COL issuance, the NRC staff clarified in a public meeting on June 27, 1995, that a hearing opportunity is proposed to be required only for changes made prior to COL issuance. The staff further clarified that after COL and before the § 52.103(g) finding a change would be subject to hearing only if it related to ITAAC noncompliance. After the § 52.103(g) finding, there would be no opportunity for hearings on § 50.59-like changes, consistent with current practice. The clarification provided by the NRC staff is useful with respect to the period after license issuance and should be reflected in final design certification rules.

However, we disagree that all Tier 2 changes made prior to COL (or Part 50 operating license) issuance, regardless of their significance or relevance to

the NRC's safety finding in the license, should be subject to hearing in the licensing proceeding. Providing hearing rights on Tier 2 changes would be inconsistent with Part 52 and with the directions of the Commission. Section 52.63(b)(2) permits licensees to make changes without prior NRC approval, subject to 10 CFR 50.59. The Commission's Staff Requirements Memorandum (SRM) dated June 23, 1993, and Section 8(b)(5) of the proposed rules, permit applicants and licensees to utilize the "§ 50.59-like process" for qualifying changes. The "§ 50.59-like process" permits an applicant or licensee to make changes in Tier 2 without prior NRC approval, subject to the provisions in § 50.59, provided that the change does not also involve a change in Tier 1, Tier 2\*, or the technical specifications. Depriving changes pursuant to the § 50.59-like process of finality (and thereby implicitly subjecting such changes to NRC review and approval and an opportunity for public hearing) would be directly contrary to these provisions. The § 50.59-like process would be rendered meaningless if changes were deprived of finality and were thus subject to NRC approval and hearings.

Consistent with current practice under § 50.59, reports of Tier 2 changes and summaries of their associated safety evaluations would be submitted by applicants and licensees to the NRC and, in turn, placed in the Public Document Room. Thus the public will have full access to information related to any changes made. An allegation that there has been noncompliance with the change control process is an appropriate subject for an enforcement action, not a hearing. Therefore, an allegation that an applicant or licensee did not comply with § 50.59 is in the nature of a request for action which should be brought pursuant to 10 CFR 2.206, rather than in a request for a hearing.

While § 2.206 has traditionally been used to request action related to licensees, we envision that, in the Part 52 context, § 2.206 would similarly provide the mechanism for members of the public to raise questions

regarding § 50.59-like changes implemented prior to issuance of a license. In this context, it is expected that the Commission would evaluate petitions received via the § 2.206 process and make a determination as to whether the questions raised are appropriate for consideration in the licensing hearing. This approach is consistent with NRC staff's position that changes made prior to COL issuance should be subject to a hearing opportunity in the COL proceeding. Appropriately, the § 2.206 or equivalent process provides the public the same opportunity before license issuance as after to raise questions regarding § 50.59-like changes and will ensure that only those changes deemed by the Commission to be significant to the NRC's safety finding in the license will be considered as part of the licensing proceeding. Although we do not believe it is necessary, provisions explicitly stating the applicability of § 2.206 (or its equivalent) in the period prior to license issuance could be incorporated in final design certification rules.

After issuance of a COL, we agree with the NRC staff that a member of the public may not request a hearing related to a § 50.59-like change pursuant to § 52.103(a) unless the change bears directly on an asserted ITAAC noncompliance. Providing a right to hearings on § 50.59 changes at the pre-operational stage would be inconsistent with 10 CFR 52.103(b), which limits hearings at the pre-operational stage to contentions that one or more of the ITAAC acceptance criteria have not been or will not be satisfied.

As justification for establishing hearing rights on Tier 2 changes, the NOPRs (Section II, Topic 2) refer to a Commission SRM dated February 15, 1991, which accepted the § 50.59-like process for Tier 2 changes but stated "that such changes open the possibility for challenge in a hearing." To conclude that all § 50.59 changes must be subject to a hearing opportunity would be an extreme interpretation of this Commission statement. In this context, the Commission's statement simply indicates that under § 50.59, there is an opportunity for hearing on changes to the technical specifications or changes involving unreviewed safety questions. If the Commission had intended to

require an opportunity for hearing on all Tier 2 changes -- which would be a fundamental departure from § 50.59 -- it is reasonable to expect that the Commission would have given this matter more extensive discussion and justification, and would not have selected language for the SRM expressly approving a "process similar to § 50.59" for making Tier 2 changes.

As further justification for establishing hearing rights on Tier 2 changes, the NOPRs state that such changes should be discouraged -- even when those changes do not constitute unreviewed safety questions -- "to restrain Tier 2 changes in order to maintain the benefits of standardization." (See NOPR Section II, Topic 2). However, this rationale is inconsistent with statements elsewhere in the NOPR. Specifically, Section III.H of the NOPR states that that the NRC should be able to impose changes to Tier 2 by plant-specific order without considering the impacts on loss of standardization because "the Tier 2 information is not as safety significant as the Tier 1 information."

Moreover, licensees are authorized by Part 52 to make changes to Tier 2, subject to the change process in § 52.63, and Section 8(b)(5)(i) of the proposed rules reflects the Commission's guidance that license applicants should also be permitted to make such changes. It would be inappropriate for the design certification rules to discourage those changes which Part 52 and the Commission already allow. The very need for and purpose in establishing two tiers was to define the certified design in Tier 1 and provide design detail in Tier 2, with appropriate flexibility for changes by applicants and licensees. Although the NOPR authorizes applicants and licensees to change their Tier 2 designs as warranted under § 52.63, it would inappropriately establish a penalty against applicants and licensees who exercise their rights to make such changes. Such a penalty would be inconsistent with the need -- recognized and granted by the Commission -- for flexibility of applicants and licensees to make Tier 2 changes. The hearing opportunity "penalty" is, moreover, a patent misuse of the public hearing process and the policy basis therefore. Furthermore, the proposal to deny finality to Tier 2 changes that



do not constitute unreviewed safety questions would create a destabilizing and totally unnecessary new regulatory complication at the very time when NRC, and most other agencies of the federal government, have been directed to eliminate unnecessary and inefficient regulations.

Affording an opportunity for a hearing on every § 50.59-like change, regardless of its significance or relevance to the NRC's safety finding, would result in tremendous regulatory uncertainty and would have a chilling effect on utilities considering the licensing of new nuclear power plants under Part 52. Such uncertainty is especially unjustified given the enhanced safety of these new standard designs and the fact that § 50.59-like changes, by definition, do not adversely affect safety.

Thus the design certification rules should be modified to specify that changes made from Tier 2 under the § 50.59-like process have finality in all subsequent proceedings unless the Commission grants (1) a petition brought under the § 2.206 or equivalent process that a specific § 50.59-like change be considered in the COL proceeding, or (2) a request for hearing under § 52.103(a) based on a properly supported contention that a particular § 50.59-like change had resulted in an ITAAC noncompliance.

b. Section 50.59-Like Changes Should Have the Protection of § 52.63 Against Backfits

Final design certification rules should also make clear that the finality accorded by design certification is not diminished for portions of the design affected by changes made in accordance with the design certification change process, including Tier 2 changes made via the § 50.59-like process.

Specifically, the backfit protection provided by Section 52.63(a) should continue to apply to § 50.59-like changes, just as it would for other types of changes (e.g., exemptions) as discussed in Section I.C.1, above. Section 52.63(a) establishes a high threshold against NRC-imposed changes to the



DCD (e.g., NRC may impose a change to Tier 2 only if the change is necessary for adequate protection or compliance with applicable requirements, and if special circumstances are present). If Tier 2 changes under the § 50.59-like process were to lose finality under Section 52.63, the NRC could impose backfits by satisfying the far less restrictive standards of Section 50.109.

This loss of finality for § 50.59-type changes would be highly destabilizing. Over the sixty year life of a plant, it may be expected that licensees will make numerous changes in their plants to make them more reliable, enhance safety, incorporate advancements in technology, and to replace aged or failed components that are no longer available on the market. If these changes were to be deprived of finality, it may be expected that, over time, large segments of the plant will lose protection under Section 52.63 against backfits - - in essence, a gradual erosion of the increased backfit protection intended under Part 52.

This loss of finality for § 50.59-type changes could also lead to inconsistent regulatory treatment of similar plants. For example, if a licensee were to change a failed pump with a newer, more reliable model under the § 50.59-like process, use of the newer model would have no protection under Section 52.63(a) and would be subject to backfits under Section 50.109. In contrast, another standardized plant with the original model would be protected against such backfits. Such a result would serve no useful regulatory purpose, and would be contrary to safety since it would be a disincentive for licensees to make improvements in their plants.

Finally, it warrants emphasis that, by definition, § 50.59-type changes will be consistent with the level of safety inherent in the original design certification. Consequently, such changes should not lose finality under Section 52.63. This result will not prevent the NRC from remedying situations that are discovered to be unsafe, because the NRC will retain its

authority under Section 52.63 to impose backfits, if such backfits are necessary for adequate protection or compliance with applicable requirements.

In sum, for the reasons discussed above, the Commission should delete the provision in Section 8(b)(5)(i) of the proposed rules which states that changes under the § 50.59-like process have no finality, and add a provision providing finality, including § 52.63 backfit protection, to changes made in accordance with the rules.

**D. The Design Certification Rule Should Provide for Finality in All Subsequent Proceedings**

Section 52.63(a)(4) explicitly states that issues resolved through design certification have finality in COL proceedings, in Section 52.103 proceedings, in operating license proceedings, and in design certification renewal proceedings. However, § 52.63(a)(4) is silent on whether design certification issues have finality in other proceedings, such as license amendment proceedings, construction permit proceedings, and enforcement proceedings. We believe that the Commission intended that design certifications have finality in all subsequent proceedings, not just the proceedings identified in Section 52.63(a)(4). To avoid the potential for confusion in the future, the Commission should modify the proposed design certification rules to clarify that issues resolved by design certification have finality in all subsequent proceedings.

Such a clarification is consistent with the purpose of Part 52. Prior to issuing a design certification under Part 52, the Commission must find that the standard design meets the applicable standards and requirements of the Atomic Energy Act and the Commission's regulations. One of the primary purposes of Part 52 is to ensure that nuclear safety and environmental issues related to the standard design are resolved during the design certification process and are not subject to later re-review and re-litigation. Therefore, once the design certification proceeding is

complete, issues related to design certification should not be allowed to be raised in any subsequent proceeding.

Depriving design certifications of finality in some subsequent proceedings would serve no useful purpose and would be unduly burdensome. As a practical matter, the absence of finality would expose the design certification to re-litigation on design issues which the NRC has already approved. Further, the lack of finality could create a situation where a COL applicant and a construction permit applicant each reference a design certification, and one would be entitled to claim finality for the design certification while the other would not. There is no rational basis for such a result.

Thus, the Commission should modify the proposed design certification rules to provide for finality of the design certification in all subsequent proceedings. Our position on finality of the certified design in Part 50 licensing proceedings is discussed further below in comments pertaining to the applicability of ITAAC under Part 50. (See Section X below).

E. Evaluation of NOPR Proposals Against the Goals of Design Certification and Part 52

The NOPR proposals on finality do not promote, and are inconsistent with, the goals of Part 52, as discussed in the Introduction and Overview section of Attachment A. Specifically:

- ° Early Resolution of Safety Issues - The NOPR proposal is inconsistent with this goal. By limiting finality to the DCD and FSER, the NOPR proposal would leave open to later re-review and re-litigation other matters resolved during the design certification process, including matters identified and approved in the SSAR, matters resolved on the docket and in meetings with the NRC, matters resolved during the rulemaking process, and the overall

sufficiency of the design. Thus, the NOPR proposal would defeat one of the major purposes of Part 52.

- ° Standardization - The NOPR proposal could result in a substantial amount of resolved design information being subject to re-review and re-litigation on a plant-specific basis during licensing proceedings. This result is directly at odds with the Part 52 goal of standardization. Re-review and re-litigation during the licensing process is inherently unpredictable, so it is likely that design matters addressed on an individual plant basis will be resolved differently for plants referencing the same design certification -- to the obvious detriment of standardization. Furthermore, contrary to the NOPR arguments (See Section II, Topic 2), the proposal to discourage changes by depriving them of finality is a patent misuse of the public hearing process to frustrate implementation of permissible, technically justified plant changes. While the proposal does not directly limit changes, it would certainly increase their complexity and cost by unduly subjecting them to the possibility of hearings.
- ° Enhanced Protection of Public Health and Safety - The NOPR proposal is unrelated to safety -- it deals only with process issues. Because public health and safety is not at issue, we urge the Commission to adopt the more workable approach to finality recommended by the industry in order to achieve the other goals of Part 52.
- ° More Stable and Predictable Licensing Process - The NOPR proposal is inconsistent with this goal. Limiting finality to the DCD and FSER will leave open to later re-review and re-litigation other matters resolved during the design certification process, thereby creating instability and uncertainty regarding the acceptability of matters approved during design certification. Additionally, the proposal to deprive changes of finality (and thereby subject changes to the possibility of hearings) will also introduce significant



instability and unpredictability in the licensing and regulatory process. Thus, the NOPR proposal would defeat another of the major purposes of Part 52.

In summary, the NOPR-proposed approach to issue resolution does not relate to public health and safety and runs counter to each of the other three goals for design certification that the NOPR purports to uphold. Therefore, the proposal should be rejected as being contrary to the goals of Part 52, and the finality provisions should be revised in accordance with the recommendations herein.

#### **F. Conclusion**

Finality of issue resolution is essential to the viability of design certification; however, the proposed rules unduly limit the matters entitled to finality. Issues related to the adequacy of the standard design and matters resolved during the NRC review of the design certification application should have finality. Additionally, changes made in accordance with the change process should have finality. Finally, such matters should have finality in all subsequent proceedings. Table 1 suggests changes to Section 6 of the proposed rule to accomplish these objectives and to ensure that design certification will provide for a predictable and stable licensing process.



TABLE 1

SUGGESTED LANGUAGE FOR THE ISSUE RESOLUTION PROVISION  
IN THE DESIGN CERTIFICATION RULES<sup>2</sup>

§ 6. Issue resolution for the design certification

(a) The Commission has found that the structures, systems, components, and design features of the standard design described in the DCD and FSER satisfy the relevant Commission regulations and provide adequate protection of the health and safety of the public. Inherent in this finding is the determination that additional or alternative structures, systems, components, design features, design criteria, testing, analyses, or justifications are not necessary for the standard design. The lack of need thereof is, accordingly, also considered a matter resolved in connection with issuance of this design certification rule.

(b) All nuclear safety issues associated with the information in the FSER, DCD, application for design certification of the ABWR including the ABWR Standard Safety Analysis Report, docket of the application for design certification of the ABWR, and the rulemaking record for design certification of the ABWR are resolved within the meaning of 10 CFR 52.63(a)(4). Within the scope of the standard design as discussed in the FSER and DCD, the NRC may not require an applicant or licensee to:

- (1) provide structures, systems, components, or design features not discussed in the FSER or DCD; or
- (2) provide additional design criteria, testing, analysis, or justification for structures, systems, or components discussed in the FSER or DCD; except in accordance with the change processes and other provisions in this design certification rule.

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<sup>2</sup> This suggested language applies to the ABWR. Similar language is appropriate for the System 80+.

(c) All environmental issues associated with the information in the NRC's environmental assessment for the ABWR design or the severe accident design alternatives in Revision 1 of the Technical Support Document for the ABWR, dated December 1994, are resolved within the meaning of 10 CFR 52.63(a)(4).

(d) Any change made in accordance with the change process set forth in Section 8 of this design certification rule is resolved within the meaning of 10 CFR 52.63(a)(4).

(e) The matters listed above shall be considered resolved in all subsequent proceedings, including proceedings for issuance of a combined license, construction permit, or operating license; permit or license amendment proceedings; design certification and license renewal proceedings; proceedings under 10 CFR 52.103; and enforcement proceedings.

## II. "Applicable Regulations"

### A. Introduction

In SECY-90-016 and SECY-93-087, the NRC staff identified a number of positions on severe accident and other technical issues that are not embodied in current NRC regulations in Part 50, and the staff applied these positions, as approved and modified by the Commission, to the design certification applications.

Notwithstanding that Part 50 does not require these features, the design certification applicants voluntarily agreed to include the features in their designs. Further, as discussed in the FSERs for the ABWR and System 80+, the design certification applicants demonstrated that the standard designs conform with the positions in SECY-90-016 and SECY-93-087, as modified and accepted by the Commission. Thus, the standard designs have clearly achieved the "higher standard of severe accident safety performance" expected by the Commission in the Policy Statement on Severe Reactor Accidents. (See 50 *Fed. Reg.* 32138, August 8, 1985.) Despite the clear demonstration of conformance with these positions and the Commission's policies, the NRC staff has proposed that the design certification rules designate more than a dozen of these severe accident and technical issues as "applicable regulations" -- to give these positions a status similar to the status of the Commission's regulations in Part 50 for the purpose of issuing the design certification, imposing backfits, and renewing the design certification. Thus the design certification applicants' voluntary adherence to higher standards has become a form of penalty, broadening the staff's authority to order compliance backfits that would not be permissible for plants under Part 50.

Specifically, Section 5(c) of the proposed rule designates the NRC's position on these severe accident and other technical issues as "applicable regulations" for the purpose of 10 CFR 52.48, 52.54, 52.59, and 52.63 (which deal with review of design certification applications, issuance of design certifications, renewal of design certifications, and changes to design certifications, respectively). In drafting these "applicable regulations," it was the NRC staff's intent that they be "stated broadly, similar to the general design criteria," and that they apply to issues that "deviate

from or are not embodied in current regulations" (emphasis added). (See SECY-92-287A, Enclosure 2, pp. 1-2.)

As discussed below, this rationale is flawed. The approach proposed by the NRC staff is not needed to achieve the purposes identified by the staff for creation of "applicable regulations", and would unduly complicate an already intricate design certification rule. Further, the current process contains suitable restraints on an applicant's and licensee's ability to change its plant design, and elevating selected NRC positions to "applicable regulations" is neither necessary nor appropriate to prevent deviations from the NRC's technical positions. Contrary to the assertion in Section III.E of the NOPRs, the proposal for "broadly stated" provisions will create instability and unpredictability in the licensing and regulation of plants referencing a design certification -- an outcome which is at odds with a fundamental purpose of Part 52. Finally, the staff's proposal is at odds with Commission's direction, following the Advanced Notice of Proposed Rulemaking (ANPR) on severe accidents, that new severe accident regulations were not needed for evolutionary plant design certifications and that deferred consideration of such regulations for other advanced reactor designs.

**B. There Is No Requirement to Establish "Applicable Regulations"**

To begin with, there is no requirement in Part 52 which compels the Commission to adopt these severe accident and other technical positions as "applicable regulations." To the contrary, 10 CFR 52.48 defines the applicable standards for design certification as the technically relevant standards in Parts 20, 50, 73, and 100. Section 52.48 does not provide any authorization for the NRC to identify additional "applicable regulations," and such identification is contrary to Section 52.48.

Second, the "applicable regulations" are not necessary for adequate protection or to improve the safety of the standard designs. Each of the design certification applicants has already included design features and provisions corresponding to the "applicable regulations" within the standard designs. Therefore, it is not necessary

for the Commission to establish the "applicable regulations" in order to ensure that the standard designs will achieve a higher level of safety.

Furthermore, the "applicable regulations" are inconsistent with the Commission's directions regarding rulemaking on severe accidents. In response to the ANPR on severe accidents, the Commission issued a Staff Requirements Memorandum on September 14, 1993, which concluded that new severe accident regulations were not needed for evolutionary plant design certifications and directed the NRC staff to defer further consideration of generic rulemaking on severe accidents until after certification of the designs for the ABWR and System 80+. The "applicable regulations" circumvent this clear Commission direction. In particular, the "applicable regulations" for the ABWR and System 80+ are identical (with one exception pertaining to steam generators, which are not relevant to the ABWR design). Thus, the "applicable regulations" are, in essence, equivalent to generic rulemaking and are therefore inconsistent with the Commission's direction.

C. "Applicable Regulations" Are Unnecessary Given the Provisions in the DCDs

The NRC staff believes it is necessary to designate these issues as "applicable regulations" in the design certification rule to prevent a design certification applicant from arguing that the Commission cannot lawfully condition approval of the design certification on compliance with the requirements used during the review of the design. The staff is concerned that these proposed requirements, without further Commission action, could be found not to be "applicable standards and requirements of the . . . Commission's regulations" for the purpose of issuing design certifications under Section 52.54. Further, the staff is concerned that without codification as "applicable regulations", the NRC could not perform its reviews when considering possible backfits, when considering design certification renewals, or when evaluating changes by a license applicant or licensee. (See NOPR Section III.E.)



Contrary to this argument, there is no need for creating a free-standing collection of "applicable regulations." The NRC staff has applied these technical positions in reviewing and approving the standard designs, and each of these positions has corresponding staff-approved provisions in the respective DCD. In particular, as shown in the NOPR comments submitted by the design certification applicants, each of the positions is addressed in whole or part in Tier 1 (from which an applicant or licensee cannot depart without NRC approval and an opportunity for a hearing). Additionally, each of these positions is discussed in detail in various provisions of Tier 2. The design certification applicants are not requesting that any of these provisions in Tier 1 or Tier 2 be modified. Therefore, contrary to the staff's argument, there is no need to establish "applicable regulations" for these positions in order to ensure that the design certification applications conform with these provisions.

In fact, since they are integral elements of the DCD, which is incorporated by reference in the design certification rule, these design provisions already serve the purpose of "applicable regulations" for all of the situations identified by the staff; i.e., (1) they will govern issuance of the design certification rule, (2) they will have the force of "applicable regulations" in the sense that a licensee may be compelled by the NRC to comply with these provisions if found to be out of compliance during the life of the plant pursuant to § 52.63(a), (3) they will comprise part of the regulatory base for making design certification renewal determinations, and (4) they must be considered in making changes. Therefore, there is no need for additional, free-standing "applicable regulations" in the design certification rule to accomplish the purposes of 10 CFR 52.48, 52.54, 52.59 and 52.63.

Additionally, because all of these technical positions are implemented in whole or part by provisions in Tier 1, as well as Tier 2, there is no need to create free-standing "applicable regulations" to restrict changes by applicants and licensees. Part 52 change controls ensure that applicants and licensees who reference the design certification will be greatly restricted in making changes that would

adversely affect these positions. Specifically, in accordance with Section 8 of the design certification rule and 10 CFR 52.63(b), an applicant or licensee will be able to make changes that deviate from Tier 1 or involve an unreviewed safety question only by obtaining prior NRC approval and an exemption, including an opportunity for a hearing. Therefore, even if these technical positions are not designated as "applicable regulations," there will be sufficient controls to prevent an applicant or licensee from making changes that are inconsistent with the NRC's technical positions.

The NRC staff has made a number of arguments in support of its position that "applicable regulations" are necessary. Table 2 lists these arguments and explains why each is adequately resolved by the provisions in the DCD.

**TABLE 2**  
**RESOLUTION OF NRC STAFF ARGUMENTS**  
**RELATED TO "APPLICABLE REGULATIONS"**

| Staff Argument   | Resolution  |
|--|---|
| <p>Without the "applicable regulations," the NRC staff could not perform reviews in accordance with the certification renewal criteria in Section 52.59. (NPR, III.E.)</p>   | <p>The provisions in the DCD, including the design provisions in the DCD corresponding to the NRC's technical positions in question, are regulations applicable and in effect at the time of the certification under Section 52.59. Thus, the NRC can perform the reviews specified in Section 52.59 by using the DCD rather than the "applicable regulations."</p>   |
| <p>Without the "applicable regulations," the NRC staff could not perform reviews (and would not have a baseline for evaluating proposed changes) in accordance with the change process in § 52.63. (NPR, III.E.)</p> | <p>The DCD includes design provisions corresponding to the "applicable regulations." In particular, Tier 1 of the DCD addresses each of the "applicable regulations" in whole or part. An applicant or licensee may not make changes in these provisions without complying with the change processes specified in § 52.63, including the stringent process for Tier 1 changes and changes to Tier 2 involving an unreviewed safety question. Thus, there are sufficient controls in place to ensure that an applicant or licensee can not make a change that would adversely affect a design provision related to the matters associated with the "applicable regulations."</p> |

TABLE 2 - Cont.

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|---|--|
| <p>The Commission could not, without re-reviewing the merits of each position, impose a change to Tier 1 or issue a plant specific order to ensure compliance with the position. (NOPR, III.E.)</p>   | <p>In the FSER, the NRC concluded that the design provisions in the DCD conform with the NRC positions. Therefore, there should be no need for the Commission to order changes related to these provisions, and any such changes--indeed, even the prospect of future changes--would be destabilizing and contrary to the purpose of Part 52.</p>  |
| <p>Codification of the "applicable regulations" serves as a basis for obtaining public comments. (NOPR, III.E.)</p>   | <p>The NRC positions were previously published in SECY-90-016 and SECY-93-087. The DCD and FSER discuss the design provisions which conform with these positions, and the public may comment on the DCD and FSER as part of its comments on the proposed rule.</p>   |
| <p>Codification of the "applicable regulations" serves to confirm that the requirements are "applicable regulations" under Section 52.54. In the absence of this codification, a design certification applicant could argue that the Commission cannot lawfully condition approval of the design certification on compliance with the NRC's positions. NOPR, III.E.</p> | <p>The DCD includes provisions which conform with the NRC positions embodied in the "applicable regulations"--provisions which become part of an applicable regulation (i.e., the design certification rule) once the final rule is adopted. The design certification applicants are not requesting these provisions in the DCD be modified. Therefore, it is unnecessary to designate the NRC's positions as "applicable regulations" under Section 52.54 in order to ensure that the design certification applications conform with the NRC's positions.</p> |

TABLE 2 - Cont.

|   |  |
|---|--|
| <p>By designating "applicable regulations," the NRC will improve the stability and predictability of the licensing process and minimize the potential for differing interpretations. (NOPR, III.E).</p>   | <p>To the contrary, the staff's proposed "applicable regulations" are intentionally "broadly stated;" therefore, they are especially subject to differing interpretations over the 15 year life of the certification plus 60 year plant life, and are destabilizing. In contrast, the DCD contains specific and objective design provisions conforming with the NRC's positions. The DCD provisions are not subject to differing interpretations and therefore provide for a stable regulatory environment. Furthermore, this stability is ensured because each of the NRC's positions is addressed in whole or part in Tier 1 of the DCDs, which is subject to stringent change controls.</p> |
| <p>Design information in the DCD cannot function as a surrogate for "applicable regulations" because this information describes only one method for meeting the NRC's position and would not provide a basis for evaluating changes to the design information. (NOPR, III.E.)</p> | <p>It is unnecessary to create "applicable regulations" in order to provide a basis for evaluating changes. 10 CFR 52.63 and Section 8 of the proposed design certification rules specify criteria for evaluating changes to the design information in the DCD. In particular, because each of the NRC's positions is addressed in whole or part in Tier 1 of the DCD, changes that affect these positions will be subject to stringent change controls.</p>   |



D. The "Broadly Stated" Provisions Will Create Instability

In addition to being unnecessary as discussed above, the NRC staff's proposed "applicable regulations" are "broadly stated" using vague and general terms, thereby creating substantial instability and uncertainty. The industry is particularly concerned that these "applicable regulations" could be used in the future by the NRC staff to impose backfits on applicants and licensees that could not otherwise be justified on the basis of adequate protection of public health and safety.

Under 10 CFR 52.63(a), the NRC cannot make a generic or plant-specific change in Tier 1 or Tier 2 unless the change is necessary for adequate protection or "compliance with the Commission's regulations applicable and in effect at the time the certification was issued." By designating certain technical positions as "applicable regulations," the NRC staff, in essence, is creating the potential for backfits in Tier 1 and Tier 2 to reflect new interpretations of these technical positions or incremental changes in the body of knowledge on a particular severe accident phenomenon. Such "compliance" backfits would be precluded if these technical positions are not designated as "applicable regulations." It is worth emphasizing that, even if the NRC is not able to impose "compliance" backfits related to its technical positions, this would in no way diminish NRC authority under § 52.63(a) to impose changes necessary (on the basis, *e.g.*, of significant new safety information) to assure adequate protection of the public health and safety.

The potential for "compliance" backfits is all the more troublesome given that the NRC staff has intentionally used "broadly stated" language in drafting the "applicable regulations." These "broadly stated" provisions are particularly susceptible to new and diverse interpretations during the 15 to 30-year life of the design certification plus the 60-year life of plants that reference the design certification -- interpretations at variance with the understandings that were translated into specific Tier 1 and Tier 2 requirements in the DCD. New

interpretations could be used to impose backfits on applicants and licensees. The injection of this factor into the Part 52 process runs counter to the objective of design and licensing stability.

This concern is especially acute with respect to the staff's "broadly stated" positions on severe accident issues. In the area of severe accidents, new information is continuously being developed as a result of research and test programs, enhanced modeling techniques, etc. This new information could give rise to new NRC interpretations of the "applicable regulations" for severe accidents. For example, the staff's proposed "applicable regulations" require the use of "best available methods" to evaluate equipment survivability during severe accidents. The "best available methods" will almost certainly change over time. As a result, the staff could require an applicant or licensee to perform new evaluations or make backfits to its plant to reflect changes in the state-of-the-art. The staff could require such new evaluations or backfits even though the existing design is acceptable, even though changes are not necessary to provide adequate protection for the public health and safety, and even though backfits would not result in any increase in safety. This scenario vividly illustrates the destabilizing nature of the NRC staff's concept of "applicable regulations." Furthermore, this result is contrary to the purpose of design certification, which is intended to provide finality for standard designs and to prevent NRC backfits except to provide adequate protection or compliance with NRC's existing regulations.

The "applicable regulations" also contain terms and phrases which are equally destabilizing - - terms such as "to the extent practical," "advanced techniques," "reliable means," "equipment that would 'most facilitate' the ability of the operator," "reduce the potential for," "best estimate," "reduce the amount," "approximately," "most significant," "more likely," and "minimize." Each of these terms is susceptible to new interpretations as the state-of-the-art evolves (or with changes in cognizant NRC staff personnel), and could be used to impose backfits even though the

standard design is acceptable and backfits are unnecessary for adequate protection of public health and safety.

In fact, the NRC staff's proposed "applicable regulations" are so vague and ambiguously worded that in some cases, the current NRC-approved standard designs, which NRC has stated comply with the "applicable regulations," might be construed as being in noncompliance in the future by the NRC staff. As identified in the following section and in the NOPR comments submitted by General Electric, there are examples where the ABWR could, even now, be construed as not satisfying the literal language of the "applicable regulations." The situation validates the industry concern that the staff's proposed "applicable regulations" are destabilizing because they could be interpreted as being inconsistent with the NRC-approved standard designs, and could give rise to challenges based upon the language in the existing FSER.

In short, the "broadly stated" provisions undercut the stability of the standard design. Unlike the NRC's current regulations in Part 50 (which benefited from focused rulemakings, have a long history of implementation, and now have relatively stable interpretations), these "broadly stated" provisions are especially susceptible to new interpretations, and therefore pose a high risk of being used by the NRC staff to impose backfits on the design certification.

In a public meeting on June 27, 1995, the staff stated that they did not "intend" to reinterpret the "applicable regulations" to impose compliance backfits. However, we are concerned that the staff's "intent" could change over time, and there is nothing in the design certification rules that would prevent the staff from reinterpreting the "applicable regulations" and imposing backfits. The staff stated that, "since the implementation of the applicable regulations has been approved in the DCRs, the staff could not backfit without meeting the standards in the change process." However, contrary to the staff's statement, the design certification rules do not state that the standard designs satisfy the "applicable regulations."

Furthermore, the staff stated that it wants the power to impose "compliance" backfits in cases where the information was later discovered to be "invalid." However, this exception is so broad that it would enable the staff to impose backfits for a variety of reasons unrelated to the adequacy of the information at the time of design certification. For example, future research may disclose new technical information which the staff could use to "invalidate" statements in the DCD, even though the statements in the DCD accurately reflect the technical information available at the time of design certification. Similarly, in the future, more precise analytical techniques could be developed and used by the staff to "invalidate" the statements in the DCD, even though those statements accurately reflect the techniques available at the time of design certification. In these cases, the staff could impose "compliance" backfits, even though the backfits are not necessary for adequate protection of the public health and safety. Such a result would be extremely destabilizing and is contrary to the goals of Part 52 of early issue resolution and a more stable and predictable licensing process.

Furthermore, some of the "applicable regulations" proposed by the NRC staff are moot in whole or in part. For example, provisions in the proposed "applicable regulations" for the probabilistic risk assessment, reliability assurance program and shutdown risk do not impose any requirements on the design per se, but instead only require the application for design certification to contain certain analyses. The NRC staff agrees that the applications for design certification contain the requested analyses, and the design certification applicants are not proposing to delete those analyses from its application for design certification. Therefore, these "applicable regulations" are moot and unnecessary.

Moreover, some of the NRC staff's proposed "applicable regulations" are not consistent with the positions previously approved by the Commission. For example, the "applicable regulations" require the use of "best available" methods and "best estimates" for evaluating equipment survivability in severe accidents. In contrast,



SECY-90-16, which was approved by the Commission in Staff Requirements Memorandum (SRM) dated June 26, 1990, only requires "reasonable assurance" of equipment survivability. Similarly, the staff's proposed "applicable regulation" on inter-system loss of coolant accident (ISLOCA) states that the effects of ISLOCA "must be minimized." This language was not contained in the provision in SECY-90-016 approved by the Commission in the SRM dated June 26, 1990. Finally, the staff's proposed "applicable regulation" on fire protection applies to systems "important to safety," which is inconsistent with Appendix R of Part 50 and SECY-90-016 which address fire protection for systems "important to safe shutdown."

The "applicable regulations" constitute general requirements. They are not design-specific, as evident by the fact that the "applicable regulations" for the ABWR and System 80+ are essentially identical (except for one position related to steam generator tube ruptures, which is not relevant to the ABWR).

Additionally, some of the provisions in the "applicable regulations" do not even address the standard design, but instead are directed to the programs of license applicants (see, e.g., the "applicable regulations" related to inservice testing, the reliability assurance program, and shutdown programs). It is inappropriate and inconsistent with Subpart B of Part 52 to use design certification to impose requirements on license applicants or licensees that are independent of the design being certified. If the NRC desires to establish new generic requirements for license applicants and licensees, it should do so directly through an amendment to Part 50 or Subpart C of Part 52.

The NRC staff's approach for adopting the proposed "applicable regulations" is inherently flawed. First, including "applicable regulations" in the design certification does not provide a meaningful opportunity for public comment on the "applicable regulations" on a par with that provided by the more focused rulemaking process associated with Part 50 regulations. Therefore, an inadequate opportunity has been provided for the NRC to consider public comment on the need



for, and substance of, the "applicable regulations." Further, if these "applicable regulations" were subjected to the NRC's own criteria for new rulemakings for existing plants (§ 50.109), the "applicable regulations" could not be individually or collectively accepted because the NRC would be unable to demonstrate that they provide "... a substantial increase in the overall protection of the public health and safety or the common defense and security ... and [that] the direct and indirect costs of implementation ... are justified in view of this increased protection."

Furthermore, NRC has not satisfied the legal requirements for establishing new regulations required by the Administrative Procedure Act (5 U.S.C. § 553 (c)) or the NRC's own Regulatory Analysis Guideline (See NUREG/BR-0056) -- the "applicable regulations" do not have legal sufficiency on a stand-alone basis. Thus the NRC has not complied with the legal requirements for imposing technical requirements by rule. Therefore, the "applicable regulations" are contrary to law and may not be included as part of the design certification rule for the standard design.

For all of the above described technical, practical, policy and legal reasons, and because "applicable regulations" as a whole are unnecessary (as discussed in Section II.C above), the Commission should reject the proposal to establish "applicable regulations" via the design certification rules.

**E. Point-by-Point Objections to the Creation of "Applicable Regulations"**

As directed by the Commission SRM on SECY-95-023, Question 4 in the NOPR requests that comments on the proposed rule address whether each of the "applicable regulations" is justified. As discussed above, the industry believes strongly that the concept of "applicable regulations" is unnecessary, destabilizing, and contrary to existing law and regulations. Notwithstanding our general opposition to the entire concept of "applicable regulations," the industry desires to

be responsive to the question in the NOPR as raised by the Commission. Accordingly, Table 3 provides comments on the propriety of each of the proposed "applicable regulations." These comments on the individual "applicable regulations" are not intended to be all-inclusive (e.g., they do not address how each of the "applicable regulations" is addressed in whole or part in Tier 1 and is therefore unnecessary). Moreover, these individual comments should not detract from the industry's general objection to the concept of the "applicable regulations" as proposed by the NRC staff. In particular, these additional comments are not intended to suggest that the NRC staff's flawed proposal can be rendered acceptable to the industry by correcting the deficiencies described in Table 3 for individual proposed "applicable regulations." Rather, Table 3 is intended to demonstrate that individually, as well as collectively, "applicable regulations" are not justified and should not be included in the design certification rules.

TABLE 3

ANALYSIS OF PROPOSED "APPLICABLE REGULATIONS"

SECTION 5(c)(1) - INTERSYSTEM LOCA

NRC Staff's Proposed "Applicable Regulation"

In the standard design, the effects of intersystem loss-of-coolant accidents must be minimized by designing low-pressure piping systems that interface with the reactor coolant pressure boundary to withstand full reactor coolant system pressure to the extent practical.

Objections to Proposal

The phrases "the effects . . . shall be minimized," and "to the extent practical" are vague and subject to numerous interpretations. The state-of-the-art may change over time, and what is infeasible today may be practical in the future. If so, NRC's proposed language could be used to require a backfit to the standard design even though such a backfit would not be needed for adequate protection. This result would be destabilizing and contrary to the intent of design certification.

Additionally, the phrase "the effects . . . shall be minimized" is inconsistent with "to the extent practical." It also deviates from the staff position in SECY-90-16 that the Commission approved in a Staff Requirements Memorandum (SRM) dated June 26, 1990, which does not require the effects of intersystem LOCAs to "be minimized."

Finally, "withstand" has no standard definition, and could be subject to future reinterpretation. This is potentially exacerbated by the ABWR Final Safety Evaluation Report (FSER), p. 3-71, which states that the ABWR piping "nearly achieves" the staff's goal of 90% survival probability under ISLOCA conditions, and p. 3-72, which states the likelihood of rupture is "low." Given the language in the FSER, the staff in the future may attempt to use the proposed "applicable regulation" to impose backfits, which would be inconsistent with Part 52's purpose.

### TABLE 3 - Cont.

#### SECTION 5(c)(2) - INSERVICE TESTING OF PUMPS AND VALVES

##### NRC Staff's Proposed "Applicable Regulation"

- (i) Piping systems associated with pumps and valves subject to the test requirements set forth in 10 CFR 50.55a(f) must be designed to allow for:
  - (A) Full flow testing of pumps and check valves at maximum design flow,
  - (B) Testing of motor operated valves under maximum achievable differential pressure, up to design basis differential pressure, to demonstrate the capability of the valves to operated under design basis conditions.
- (ii) For pumps and valves subject to the test requirements set forth in 10 CFR 50.55a(f), an applicant for a combined license which references this standard design certification rule shall submit as part of the application:
  - (A) A program for testing check valves that incorporates advanced non-intrusive techniques to detect degradation and monitor performance characteristics, and
  - (B) A program to determine the frequency necessary for disassembly and inspection of each pump and valve to detect degradation that would prevent the component from performing its safety function and which cannot be detected through the use of advanced non-intrusive techniques. The licensee shall implement these programs throughout the service life of the plant.

##### Objections to Proposal

With respect to paragraph (i), it is not always possible to test check valves at maximum design flow. Some check valves can only be tested at full system flow. Thus, paragraph (i) is not possible to implement fully.

Paragraph (ii) relates to the inservice testing program, not to the design. Inservice testing programs are the responsibility of the applicant/licensee, and are not appropriate as an "applicable regulation" for the standard design. If the NRC believes that the requirements in this paragraph should be imposed on applicants and licensees, it should initiate rulemaking to amend Part 50 to do so.

Additionally, the term "advanced non-intrusive techniques" is vague and its application will change as the state-of-the-art changes. Therefore, this provision is particularly susceptible to changing interpretations and potential backfits over time. This result would be destabilizing and contrary to the intent of design certification.

TABLE 3 - Cont.

SECTION 5(c)(3) - DIGITAL INSTRUMENTATION AND CONTROL SYSTEMS

NRC Staff's Proposed "Applicable Regulation"

For digital instrumentation and control systems, the design must include:

- (i) an assessment of the defense-in-depth and diversity of instrumentation and control systems,
- (ii) a demonstration of adequate defense against common-mode failures, and
- (iii) provision for independent backup manual controls and displays for critical safety functions in the control room.

Objections to Proposal

Paragraphs (i) and (ii) require an assessment and demonstration. The Standard Safety Analysis Report (SSAR) provides the specified assessment and demonstration, which were found acceptable by the NRC in the Final Safety Evaluation Report (FSER). Accordingly, no further action is needed to satisfy these paragraphs, and these paragraphs are moot. Therefore, there is no value to including them as an "applicable regulation."

Additionally, the terms "adequate defense" and "critical safety functions" are vague and subject to numerous interpretations.



TABLE 3 - Cont.

SECTION 5(c)(4) - ALTERNATE POWER SOURCE

NRC Staff's Proposed "Applicable Regulation"

The electric power system of the standard design must include an alternate power source that has sufficient capacity and capability to power the necessary complement of non-safety equipment that would most facilitate the ability of the operator to bring the plant to a safe shutdown, following a loss of the normal power supply and reactor trip.

Objections to Proposal

The term "most facilitate" is vague and subject to numerous interpretations.

The term "necessary complement of non-safety equipment" is vague and subject to numerous interpretations.

### TABLE 3 - Cont.

#### SECTION 5(c)(5) - OFFSITE POWER SOURCE

##### NRC Staff's Proposed "Applicable Regulation"

The electric power system of standard plant design must include at least one offsite circuit supplied directly from one of the offsite power sources to each redundant safety division with no intervening non-safety buses in such a manner that the offsite source can power the safety buses upon a failure of any non-safety buses.

##### Objections to Proposal

The ABWR standard design uses a single transformer winding from the unit auxiliary transformers to supply power to both Class 1E and non-Class 1E loads. Although the FSER, pp. 8-17 to 8-18, found this acceptable, it is possible that in the future members of the NRC staff could determine that this design does not satisfy the literal language of the NRC's proposed applicable regulation.

In the System 80+ design, each Reserve Auxiliary Transformer (RAT) has the capability of supplying power directly (i.e., not through any bus supplying non-Class 1E loads) to its respective Class 1E buses. The NRC staff documented its approval of the feature on p. 8-8 of the FSER. The "applicable regulation" requirement that power be provided "...with no intervening non-safety buses. . ." could, however, allow an argument that the non-Class 1E feeders connecting the RATs to their respective Class 1E buses violate the literal language of the "applicable regulation," even though those buses supply no non-Class 1E loads.

TABLE 3 - Cont.

SECTION 5(c)(6) - FIRE PROTECTION

NRC Staff's Proposed "Applicable Regulation"

- (i) The requirements of 10 CFR 50.48 and 10 CFR Part 50 Appendix R, Section III.G.1.a, apply to all structures, systems, and components important to safety.
- (ii) Notwithstanding any provisions in paragraph (i) of this section, all structures, systems, and components important to safety in the standard design must be designed to ensure that:
  - (A) Safe shutdown can be achieved assuming that all equipment in any one fire area will be rendered inoperable by fire and that re-entry into the fire area for repairs and operator actions is not possible, except that this provision does not apply to (1) the main control room, provided that an alternative shutdown capability exists and is physically and electrically independent of the main control room, and (2) the reactor containment;
  - (B) Smoke, hot gases, or fire suppressant will not migrate from one fire area into another to the extent that could adversely affect safe-shutdown capabilities, including operator actions; and
  - (C) In the reactor containment, redundant shutdown systems are provided with fire protection capabilities and means to limit fire damage such that, to the extent practicable, one shutdown division be free of fire damage.

Objections to Proposal

The reference in paragraph (i) to 10 CFR 50.48 is unnecessary. Section 50.48 is already applicable to plants that reference the ABWR or System 80+ through Section 52.83. Therefore, this reference is redundant and confusing.

The reference to structures, systems and components "important to safety" in paragraphs (i) and (ii) is inappropriate and incorrect. Part 50, Appendix R, Section III.G.1.a, applies to structures, systems, and components "important to safe shutdown." Furthermore, this applicable regulation does not reflect the language in SECY-90-016, as approved by the Commission in the SRM dated June 26, 1990, which refers to "safe shutdown", not "important to safety" or "safety-related".

### TABLE 3 - Cont.

The proposed "applicable regulation" contained in the ABWR FSER, p. 9-57, and in the System 80+ FSER, p. 9-57, recognized that because of "unique design layout", areas other than the containment and control room might be accepted on an individual basis. This provision was deleted in the proposed rule. As discussed on pages 9-59 to 9-61 of the ABWR FSER, the ABWR has certain exceptions to the general provision on separation (e.g., in the main steam tunnel), and the NRC has found this to be acceptable. Without the allowance for "unique design layout," the currently-approved ABWR design might be found to be inconsistent with the "applicable regulation" on fire protection.

System 80+ does not have 3-hour fire barrier separation between redundant shutdown equipment inside the annulus, as discussed on pg. 9-61 of the FSER. The staff concluded that the design is acceptable, however, because sufficient separation between redundant equipment exists in the annulus. Although protection is provided by separation in the annulus, deletion of the allowance for "... unique design layout. . ." for areas other than the containment and control room could allow the adequacy of the separation provisions in the annulus to be challenged.

Furthermore, because the allowance for "unique design layout" was in SECY-90-016, as approved by the Commission in the SRM dated June 26, 1990, the "applicable regulation" is inconsistent with the Commission's previous directions.

The term "to the extent practical" is vague and subject to numerous interpretations. Additionally, as the state-of-the-art evolves, what is "practical" will evolve, resulting in the potential for destabilizing backfits to the standard design.

TABLE 3 - Cont.

SECTION 5(c)(7) - RELIABILITY ASSURANCE PROGRAM

NRC Staff's Proposed "Applicable Regulation"

The standard design must include and an applicant for a combined license which references this standard design certification rule shall submit as part of the application:

- (i) The description of the reliability assurance program used during the design that includes, scope, purpose, and objectives;
- (ii) The process used to evaluate and prioritize the structures, systems, and components in the design, based on their degree of risk-significance;
- (iii) A list of structures, systems, and components designated as risk-significant; and
- (iv) For those structures, systems, and components designated as risk-significant:
  - (A) A process to determine dominant failure modes that considered industry experience, analytical models, and applicable requirements; and
  - (B) Key assumptions and risk insights from probabilistic, deterministic and other methods that considered operation, maintenance and monitoring activities.

Objections to Proposal

The reference to the design certification application is moot and has no meaning once the design certification has been issued.

Additionally, design certification should not be used to impose requirements on combined license applicants and licensees that are independent of the standard design features. Indeed, the industry and NRC staff reached specific agreement as a result of a public meeting on April 25, 1994, that requirements for COL applicants and licensees related to use and maintenance of a PRA and implementation of a reliability assurance program would be addressed by a generic rulemaking to be completed prior to the first COL application. This agreement is reflected in SECY-94-182 which was accepted by the Commission in their SRM dated July 27, 1994.



## TABLE 3 - Cont.

### SECTION 5(c)(8) - ANALYSIS OF EXTERNAL EVENTS

#### NRC Staff's Proposed "Applicable Regulation"

The probabilistic risk assessment required by 10 CFR 52.47(a)(1)(v) must include an assessment of internal and external events. For external events, simplified probabilistic methods and margins methods may be used to assess the capacity of the standard design to withstand the effects of events such as fires and earthquakes. Traditional probabilistic techniques should be used to evaluate internal floods. For earthquakes, a seismic margin analysis must consider the effects of earthquakes with accelerations approximately one and two-thirds the acceleration of the safe-shutdown earthquake.

#### Objections to Proposal

The provision is unnecessary. The SSARs contain the information sought by this proposed applicable regulation, and the NRC has found this information to be acceptable in the FSERs. Therefore, no further action is needed to satisfy this provision, and this provision is moot. Consequently, there is no value to including it as an "applicable regulation."

TABLE 3 - Cont.

SECTION 5(c)(9) - ALTERNATE AC POWER SOURCE

NRC Staff's Proposed "Applicable Regulation"

The standard design must include an on-site alternate AC power source of diverse design capable of powering at least one complete set of equipment necessary to achieve and maintain safe-shutdown for the purposes of dealing with station blackout.

Objections to Proposal

The NRC staff's language does not reflect the specifics of each of the standard designs. Moreover, as written, the "applicable regulation" appears to conflict with the regulation that already governs use of an alternate AC power source, § 50.63.

### TABLE 3 - Cont.

#### SECTION 5(c)(10) - CORE DEBRIS COOLING

##### NRC Staff's Proposed "Applicable Regulation"

- (i) The standard design must include the features in paragraphs (A)-(C) below that reduce the potential for and effect of interactions of molten core debris with containment structures:
  - (A) Reactor cavity floor space to enhance debris spreading;
  - (B) A means to flood the reactor cavity to assist in the cooling process; and
  - (C) Concrete to protect portions of the lower drywell\* containment liner and other structural members.
- (ii) The features required by paragraph (i) of this section, in combination with other features, must ensure for the most significant severe accident sequences that the best-estimate environmental conditions (pressure and temperature) resulting from core-concrete interaction do not exceed ASME Code Service Level C for steel containments or Factored Load Category for concrete containments for approximately 24 hours.

\* The words "lower drywell" are used for the ABWR only.

##### Objections to Proposal

The terms "reduce the potential for," "enhance," "assist in the cooling process," and "most significant" are vague and subject to numerous interpretations.

The term "structural members" lacks specificity.

The term "best-estimate" is open-ended, and could lead to needless recalculations of "estimates" as the state-of-the-art evolves.

Finally, the ABWR standard design currently only provides a capability to withstand environmental conditions of some severe accident scenarios for 8 to 20 hours, and the FSER has found that acceptable. (FSER, pp. 19-54 and 55) In this regard, the FSER, pp. 19-53, states that the 24-hour period was intended as a "guideline," which is inconsistent with incorporating it in an "applicable regulation."

### TABLE 3 - Cont.

#### SECTION 5(c)(11) - HIGH PRESSURE CORE MELT EJECTION

##### NRC Staff's Proposed Applicable Regulation

The standard design must include: (i) a reliable means to depressurize the reactor coolant system and (ii) cavity design features to reduce the amount of ejected core debris that may reach the upper containment.

##### Objections to Proposal

The terms "reliable means" and "reduce the amount" are vague and subject to numerous interpretations. Additionally, what is considered "reliable" may change as the state-of-the-art changes, leading to the potential for destabilizing backfits to the standard designs.

TABLE 3 - Cont.

SECTION 5(c)(12) - EQUIPMENT SURVIVABILITY

NRC Staff's Proposed Applicable Regulation

The standard design must include analyses based on best-available methods to demonstrate that:

- (i) Equipment, both electrical and mechanical, needed to prevent and mitigate the consequences of severe accidents is capable of performing its function for the time period needed in the best-estimate environmental conditions of the severe accident (e.g., pressure temperature, radiation) in which the equipment is relied upon to function; and
- (ii) Instrumentation needed to monitor plant conditions during a severe accident is capable of performing its function for the time period needed in the best-estimate environmental conditions of the severe accident (e.g., pressure, temperature, radiation) in which the instrumentation is relied upon to function.

Objections to Proposal

This provision is unnecessary. It calls for an analysis that is already in the SSAR which has been reviewed and approved by the NRC. Therefore, this provision is moot, and there is no value in including it as an "applicable regulation."

The term "needed" is inappropriate because severe accident features are not "needed" to satisfy NRC regulations or assure the adequate protection of public health and safety.

Further, the term "best available" and "best-estimate" are open-ended, and could lead to needless re-evaluations and the potential for backfits as the state-of-the-art evolves. Such a result is very likely to occur, because research regarding the effects of severe accidents is still in its infancy, and knowledge of severe accident phenomena is rapidly increasing. Additionally, requirements for use of the "best-available" method and "best-estimates" deviate from the provision in SECY-90-16 that was approved by the Commission in the SRM dated June 26, 1990, which only required "reasonable assurance" of equipment survivability.



TABLE 3 - Cont.

SECTION 5(c)(13) - CONTAINMENT PERFORMANCE

NRC Staff's Proposed "Applicable Regulation"

The standard design must include design features to limit the conditional containment failure probability for the more likely severe accident challenges.

Objections to Proposal

The terms "limit" and "more likely" are vague and subject to numerous interpretations.

### TABLE 3 - Cont.

#### SECTION 5(c)(14) - SHUTDOWN RISK

##### NRC Staff's Proposed "Applicable Regulation"

- (i) The standard design must include a systematic examination of features in relation to shutdown risk assessing:
  - (A) Specific design features that minimize shutdown risk;
  - (B) The reliability of decay heat removal systems;
  - (C) Vulnerabilities introduced by new design features; and
  - (D) Fires and floods occurring with the plant in modes other than full power.
- (ii) An applicant for a combined license which references this design certification rule must submit as part of the application a description of the program for outage planning and control that ensures:
  - (A) The availability and functional capability during shutdown and low power operations of features important to safety during such operations; and
  - (B) The consideration of fire, flood, and other hazards during shutdown and low power operations. The licensee shall implement this program throughout the service life of the plant.

##### Objections to Proposal

Paragraph (i) is unnecessary. The Standard Safety Analysis Report (SSAR) contains the information sought by this proposed "applicable regulation", and the FSER has found this information to be acceptable. Therefore, this paragraph is moot, and there is no value to including it as an "applicable regulation."

Further, the terms "systematic," "minimize," "new design features," and "modes other than full power" are vague and subject to numerous interpretations.

Paragraph (ii) relates to the COL applicant, not the standard design. It is not appropriate as an "applicable regulation" for the standard design. If the NRC believes that the requirements in this paragraph should be imposed on applicants and licensees, it should initiate a rulemaking to amend Part 50 to do so.

In this regard, NRC has already initiated a rulemaking proceeding to amend Part 50 to include requirements related to shutdown conditions. (See 59 Fed. Reg. 52707 (October 19, 1994).) The NRC should not pre-empt or prejudice the results of that rulemaking by imposing an "applicable regulation" on shutdown conditions.

### TABLE 3 - Cont.

#### SECTION 5(c)(15) - APPLICABLE REGULATION FOR CONTAINMENT BYPASS POTENTIAL RESULTING FROM STEAM GENERATOR TUBE RUPTURES

(Applies to System 80+ only)

##### NRC Staff's Proposed "Applicable Regulation"

The standard design must include a best-estimate, systematic evaluation of plant response to a steam generator tube rupture (SGTR) to:

- (i) Identify potential design vulnerabilities, and
- (ii) Assess potential design improvements to mitigate the amount of containment bypass leakage that could result from a SGTR.

##### Objections to Proposal

This applicable regulation is unnecessary. An evaluation of the System 80+ design with respect to SGTR, including examination of the benefits and limitations of existing design features and potential changes to mitigate steam generator tube rupture events, is provided in CESSAR-DC Appendix 5F. The NRC staff stated on FSER pages 15-29 and 19-75 that there is reasonable assurance that SGTR events pose no undue threat to the public health and safety. That conclusion is based, as stated on FSER page 19-75, on the preventive and mitigative features of the System 80+ design documented in CESSAR-DC Appendix 5F. CESSAR-DC contains the information sought by this applicable regulation.

Further, the phrases "best-estimate, systematic evaluation" and "mitigate the amount of" are vague and subject to various interpretations. In addition, what constitutes a best-estimate evaluation is likely to change as evaluation methods evolve. It is also noted that this applicable regulation as stated in the FSER requires evaluation of potential design improvements "which are significant and practical and do not impact excessively on the plant." That phrase does not appear in the applicable regulation as stated in the NOPR, thereby making the scope of the existing evaluation more vulnerable to challenge. For these reasons, this applicable regulation is destabilizing and contrary to the intent of design certification.

F. Evaluation of the NOPR Proposal Against the Goals of Design Certification and Part 52

The NOPR proposals on "applicable regulations" do not promote, and are inconsistent with, the goals of Part 52, as discussed in the Introduction and Overview section of Attachment A. Specifically:

- Early Resolution of Safety Issues - The NRC staff's proposal is inconsistent with this goal. One of the purposes of the staff's proposal is to create "broadly stated" provisions which can be used to impose backfits on Tier 1 and Tier 2 of the DCD. Thus, in matters involving the "applicable regulations," the staff proposal creates uncertainty regarding the resolution of these matters during design certification by establishing "applicable regulations" as a tool for possible reconsideration of standard designs during the life of the design certification. Thus, the staff's proposal would defeat one of the major purposes of Part 52.
- Standardization - The "broadly stated" and vague statements in the proposed "applicable regulations" are subject to varying interpretations which can be used to impose backfits on individual plants, to the detriment of standardization. In contrast, the provisions of the DCD which implement the NRC's positions in question are specific, and standardization will be achieved through the DCD, not through the "applicable regulations."
- Enhanced Protection of Public Health and Safety - "Applicable regulations" are not necessary to enhance protection of public health and safety. As stated above, the DCDs already contain provisions which conform with the NRC's technical and severe accidents positions in SECY-90-016 and SECY-90-087, and associated SRMs, and therefore the standard designs achieve a higher level of safety without need for "applicable regulations." Further evidence that neither the design-related nor operational-related "applicable

regulations" are necessary to ensure the adequate protection of public health and safety is the fact that they are not being applied to existing plants. If the NRC were to determine that backfits to the standard designs are necessary for adequate protection, the NRC could impose such backfits directly under § 52.63(a) without the need of "applicable regulations." Therefore, the staff's proposal is not necessary for ensuring public health and safety, and does not promote the achievement of this goal.

- ° More Stable and Predictable Licensing Process - Contrary to the assertion in Section III.E of the NOPRs, the NRC staff proposal would defeat the realization of this goal. By establishing "applicable regulations," the staff is creating a potential for backfits to reflect new or different NRC interpretations of its "broadly stated" provisions. This will cause instability and uncertainty regarding the acceptability of matters approved during design certification. Thus, the NRC staff's proposal would defeat another of the major goals of Part 52.

In summary, the NRC staff proposal does not enhance the protection of public health and safety and runs counter to each of the other three goals of design certification the NOPR purports to uphold. Therefore, the staff's proposal should be rejected as being contrary to the goals of Part 52.

#### G. Conclusion

The Commission need not and should not identify free-standing "applicable regulations" in the design certification rules. The "applicable regulations" are destabilizing because they could be used to impose backfits on applicants and licensees. Furthermore, because each of the proposed "applicable regulations" is addressed in Tiers 1 and 2 of the design certifications -- which themselves will become rules -- there is no need to designate the NRC's technical positions as "applicable regulations" in order to accomplish the goals sought by the staff.



Finally, the proposed "applicable regulations" addressing operational programs are inappropriate and should be deleted from the final design certification rules for the additional reason that they are beyond the scope of these standard design certifications. The Commission should, if deemed necessary, pursue new NRC regulations in these areas via rulemaking to amend Part 50 or Subpart C to Part 52.

### III. NRC Verification of ITAAC Determinations

#### A. Introduction

As required by Part 52, each of the proposed design certification rules contains inspections, tests, analyses and acceptance criteria (ITAAC) for use in determining that a plant has been built in conformance with the certified design. As stated in 10 CFR 52.97(b)(1), these design certification ITAAC together with associated site-specific ITAAC in the combined license (COL) must be sufficient to provide reasonable assurance that a plant has been constructed and will be operated in conformity with the license, the Atomic Energy Act and the Commission's rules and regulations. Satisfaction of ITAAC acceptance criteria provides the sole basis for the Commission finding required by Section 52.103(g).

As described in the Senate Energy and Natural Resources Committee Report on the Energy Policy Act of 1992 (EPACT), the purpose of the new licensing process, and ITAAC in particular, is to "enhance certainty for the utility building the plant by spelling out before construction begins what conditions the completed plant must satisfy in order to operate." The same Committee Report further describes this purpose as to "provide NRC regulators objective safety standards (i.e., acceptance criteria) with which to measure the constructed plant in deciding whether the plant is safe to operate." Similarly, as the NRC staff stated in SECY-91-178, "[t]he benefits to the early designation of these [ITAAC] verification requirements include an up-front agreement to requirements and acceptance criteria" for the constructed plant.

The purpose and intent of ITAAC is thus clearly established by Part 52, the EPACT and various Commission papers. Moreover, the structure and content of ITAAC for the standard designs have been defined in Tier 1 of the proposed design certification rules. Specifically, the typical design certification ITAAC has the following form:

| <u>Design<br/>Commitment</u>              | <u>Inspection, Test<br/>or<br/>Analysis</u> | <u>Acceptance<br/>Criteria</u>                              |
|---|---|---|
| The pump has a<br>flow rate of 100<br>gpm | Test for pump<br>flow                       | Pump flow rate is<br>equal to or<br>greater than 100<br>gpm |

The simplified example above is representative of ITAAC in that the specified acceptance criteria (1) correspond to the identified Tier 1 design requirement(s), (2) are stated in objective terms and (3) focus on the specific end products or results to be verified.

At appropriate intervals during construction, Section 52.99 requires the NRC staff to publish notices of successful ITAAC completion in the *Federal Register*. However, the manner in which the NRC staff is to verify that ITAAC are met is not specified. While we recognize that the details of an ITAAC implementation process, i.e., licensee ITAAC determinations and corresponding NRC verifications, will be the subject of future discussion, the nature of the NRC verification of ITAAC determinations has recently become a significant industry concern based on SECY-94-294, entitled, "Construction Inspection and ITAAC Verification," and preliminary discussions with the NRC staff. In particular, these interactions have raised industry concerns that in determining whether ITAAC have been satisfied, the NRC staff contemplates broad-ranging evaluations of quality assurance activities, e.g., adequacy of installation, training and test procedures, adequacy of procurement documentation, etc. Such broad-ranging evaluations would be contrary to the purpose of ITAAC and to the focus of the acceptance criteria specified in design certification ITAAC on the end-products and results of construction.

Because of the potential for impact on construction plans and schedules and the scope of the post-construction hearing, effective, efficient ITAAC implementation, including NRC ITAAC verifications, is as critical to the overall process as the

precise definition of ITAAC in these design certification rules. Accordingly, we request that the Commission use the opportunity presented by these design certification rules to define the nature of the NRC verification of ITAAC, consistent with the established intent and structure of ITAAC.

Doing so will:

- clarify the Commission's intent with respect to ITAAC verification, consistent with the objective of establishing up-front the requirements to be met by the constructed plant;
- establish a basis for development of a focused, effective and workable ITAAC implementation process; and
- instill industry, investor and public confidence in the practical implementation of ITAAC and thus the predictability of the new licensing process

Specifically, we urge the Commission to include provisions within the design certification rules that clearly specify that compliance with ITAAC shall be determined by verifying that the required inspections, tests, and analyses specified in the ITAAC have been performed, and that, based solely on the performance thereof, the corresponding acceptance criteria have been satisfied. This would provide focus and stability to the ITAAC process without diminishing the NRC's Part 50 inspection and enforcement authority as it relates to evaluation of quality assurance activities, including effective identification and correction of deficiencies.

**B. The Design Certification Rules Should Clearly Indicate the Matters to Be Considered in Verifying ITAAC Determinations**

ITAAC properly focus on the end products and results of construction, i.e. whether the as-built plant condition is acceptable. As a result, ITAAC acceptance criteria address matters such as minimum pump flow rates, acceptability of welds under the ASME Code, the basic configuration of structures and systems, and the automatic actuation of safety features. This focus of ITAAC reflects the recognition that it is

the acceptability of the end products and results of construction -- not of underlying matters encompassed by the Quality Assurance Program (QAP) -- that is determinant with respect to the NRC staff's safety finding on the adequacy of plant construction. Proper implementation of underlying programs and processes is encompassed by the QAP and assured by NRC inspection and enforcement thereof.

The following statements from the April 1993 draft Commission paper on COL form and content aptly contrast the important but distinct roles of ITAAC and the QAP:

- "The QAP will identify, document, and correct deficiencies during construction on an ongoing basis, whereas ITAAC will demonstrate that the end result of the construction process is acceptable."
- "The ITAAC provide for 'end-of-process' determinations, not 'day-to-day' evaluation of the construction process that the QAP provides."
- "The ITAAC would measure the successful end point of the construction process, and QAP documentation could be used to assure the design and construction process had been performed properly."

In the same draft Commission paper, the NRC staff concluded that there was no need for a separate ITAAC on quality assurance because such an ITAAC would be redundant to ITAAC verifying the proper as-built condition or performance of individual structures, systems and components. Similar logic resulted in the development of design certification ITAAC with a focus on the end products of construction.

It follows directly that the focus of ITAAC on end products and results of construction -- and reliance on the QAP for addressing underlying programs and processes -- must extend to ITAAC implementation, including their ultimate verification by the NRC staff. Indeed, because of the special legal significance of



ITAAC under Part 52 (authorization to commence initial operation is solely dependent on ITAAC compliance, and properly supported contentions of ITAAC noncompliance are the sole basis for the post-construction hearing opportunity) it is imperative that the NRC's verification of ITAAC compliance focus on the end products or results specified in the ITAAC acceptance criteria and not on underlying quality assurance matters.

Absent a focus on verifying compliance with specified acceptance criteria, the ITAAC process could result in a return to the problematic licensing process under Part 50, in which the staff's preoperational readiness determination and the preoperational hearing became a forum for unfocused and open-ended examination of virtually limitless issues of little or no safety significance prior to allowing a plant to operate.

NRC verification of quality assurance matters not specified in ITAAC would also be contrary to the purpose of ITAAC and the shared goal of the industry, NRC and Congress - - to designate up-front the requirements and acceptance criteria for operation and thus provide for a more predictable and stable licensing process. Opening NRC ITAAC verifications to consideration of a broad range of underlying and interrelated quality assurance matters would make it impossible to achieve this goal because the quality assurance factors to be considered have not been defined and could not be defined with any certainty prior to issuance of a COL. Additionally, in contrast with verifying that specific end products and results are achieved, consideration of the adequacy of quality assurance programs and processes is inherently subjective and would therefore be contrary to the Energy Policy Act intent that the ITAAC process provide "NRC regulators objective safety standards (i.e., acceptance criteria) with which to measure the constructed plant in deciding whether the plant is safe to operate." As was concluded when defining the ITAAC for design certification, inclusion of underlying quality assurance matters as part of ITAAC verification would undermine the viability of the Part 52 licensing process.

In order to ensure that the ITAAC process will be consistent with the goals of Part 52, the Commission should include a provision within the design certification rules, such as provided in Table 4, which would focus the NRC verification of ITAAC on those factors specified in the ITAAC themselves.

It should be emphasized that such a provision is directed toward the NRC's finding that the inspections, test, and analyses have been successfully completed and that specified acceptance criteria have been met, and would not affect the other obligations of licensees or the authority of the NRC under Part 50, which is incorporated by reference in Part 52. In particular, the industry's proposal would not obviate the need for licensees to properly implement their quality assurance programs under Part 50. Licensees would still be obligated to assure effective identification and correction of deficiencies, including those that may be material to ITAAC satisfaction. Nor would the industry proposal alter the NRC's authority under Part 50 to inspect quality assurance activities and, as warranted, take appropriate enforcement action (up to and including an order prohibiting operation).

C. The Industry's Proposal Would Promote the Goals of Part 52

The industry's proposal would promote the goals of Part 52, as discussed in Attachment A. Specifically:

- Early Resolution of Safety Issues - The industry's proposal directly supports the Part 52 goal of early resolution of safety issues, including the objective of up-front designation of the requirements and acceptance criteria that must be met by the constructed plant prior to operation. Specifically, the industry's proposal will ensure prospective licensees and others know and understand in advance, "the conditions the completed plant must satisfy in order to operate," consistent with the Energy Policy Act intent.

- Standardization - The industry's proposal would ensure that each plant that references the design certification will have the same pre-set requirements and acceptance criteria applied to it for purposes of licensee ITAAC determinations and associated NRC verifications. This will bring certainty and efficiency to the ITAAC process. Absent the industry's proposal, the NRC's ITAAC verification process could be different - - even reinvented - - for every plant because a different range of underlying quality assurance matters could be considered by the NRC staff in each instance, to the detriment of standardization and regulatory efficiency.
- Enhanced Protection of Public Health and Safety - The industry's proposal to clarify the focus of ITAAC on the end products and results of construction specified in the ITAAC is consistent with the purpose of ITAAC and appropriate for ensuring the safety of the constructed plant. Specifically, as required by Part 52, the specified ITAAC are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the Atomic Energy Act and the NRC's regulations. Furthermore, the proposed clarification regarding the focus of ITAAC verifications does not alter that both the licensee and NRC would still be required to consider issues related to quality assurance - - however, such consideration would occur within the context of the provisions identified in Part 50 (which are incorporated in Part 52) rather than in the context of ITAAC implementation.
- More Stable and Predictable Licensing Process - The industry's recommended rule provision would promote this goal, because it would ensure that all of the factors relevant to satisfaction of ITAAC are "spelled out" prior to construction, consistent with Part 52 and Energy Policy Act intent. Absent the industry's proposal, the NRC staff could decide on an ad hoc basis during construction which factors it will consider in making its finding that the ITAAC acceptance criteria are met. Such an approach would be extremely destabilizing and lead to an unfocused and open-

ended pre-operational review and hearing akin to those experienced under Part 50 which the new Part 52 licensing process is intended to avoid.

D. Conclusion

ITAAC and the process for ITAAC implementation are central to the success of the Part 52 licensing process. We believe that the design certification ITAAC are clear on their face and sufficient to accomplish the goals of Part 52. The industry-recommended provision for design certification rules regarding the focus of NRC ITAAC verification is vital to ensuring that the findings required by 10 CFR 52.99 and 52.103 do not become open-ended reviews of licensee quality assurance processes that are not identified in the ITAAC. To achieve the goals of Part 52 as discussed above, we recommend that the Commission incorporate in the final design certification rules the language in Table 4, or a similar provision that focuses NRC ITAAC verification on the end products and results specified in the ITAAC, and not on underlying quality assurance matters.



TABLE 4

SUGGESTED PROVISION FOR THE DESIGN CERTIFICATION RULES  
REGARDING VERIFICATION OF ITAAC

- § 11. ITAAC Verification. In order to provide a basis for the NRC to make the findings required by §§ 52.99 and 52.103(g), the licensee shall notify the NRC that the required inspections, tests, and analyses specified in the ITAAC have been successfully completed and that the corresponding acceptance criteria have been met. The NRC shall verify that the inspections, tests, and analyses referenced by the licensee have been successfully completed and, based solely thereon, find the prescribed acceptance criteria have been met. The NRC shall publish notices of successful completion of inspections, tests, and analyses in the Federal Register as required by § 52.99.



#### IV. Application of the § 50.59-Like Change Process to Severe Accident Information

##### A. Introduction

Under 10 CFR 50.59, a licensee may make changes in its safety analysis report (SAR) without prior NRC approval unless the change involves a change in the technical specifications or an unreviewed safety question (e.g., an increase in the probability of occurrence or the consequences of an accident evaluated in the SAR). Traditionally, SARs have included evaluations of design basis accidents, but not evaluations of severe accidents or probabilistic risk assessments (PRAs). Therefore, as stated in the Commission's SRM dated February 15, 1991, evaluations of changes under § 50.59 have focused on design basis accidents only. This § 50.59 change process is incorporated by reference in 10 CFR 52.63(b)(2) for plants that a reference design certification.

Chapter 19 of Tier 2 of the DCDs contains severe accident evaluations and certain results from the PRA for the standard designs. Because this material will be included or referenced in future SARs, the scope of § 50.59 evaluations would be drastically expanded under the proposal contained in the NOPRs, such that § 50.59 evaluations would be performed, not only for changes related to design basis accidents, but also for changes related to the severe accident evaluations and PRA results in Chapter 19. In particular, Section 8(b)(5) of the proposed rule would require applicants and licensees to perform a § 50.59 evaluation for any change affecting the severe accident evaluations and PRA results in Chapter 19 to determine whether the change constitutes an unreviewed safety question. Furthermore, Section 8(b)(5) of the proposed rule provides that a change in the severe accident evaluations and PRA results in Chapter 19 would constitute an unreviewed safety question if the change would increase the probability of occurrence or the consequences of a severe accident evaluated in Chapter 19 (including even insignificant increases in probability). Section 8(b)(5) of the proposed rules contains only one limited exception, in that changes to Section 19E

for the ABWR and to Section 19.15 for the System 80+ (including associated appendices) would constitute an unreviewed safety question only if there is a "substantial increase" in the probability or consequences of the severe accidents evaluated in the section.

We believe that the Commission should reject the NOPR proposal for applying the § 50.59-like process to Chapter 19. The good purpose served by considering severe accidents in the design certification process has already been achieved -- these designs achieve a significantly higher level of severe accident protection than their forerunners. As discussed below, we support the Commission's SRM on SECY-90-377, which directs that severe accident insights be preserved. The NOPR proposal, however, would drastically increase the burden on licensees with respect to § 50.59 safety evaluations while providing no commensurate improvement in safety. The excessive and life-long regulatory burden inherent in this proposal would effectively single out and penalize future licensees for building safer plants.

Moreover, the express purpose of the proposal is to maintain the resolution of (i.e., regulate) severe accident issues on par with design basis issues. (See NOPR Section III.H.) The Commission has consistently rejected the notion that such regulation over severe accident matters is necessary. (See, e.g., Policy Statement on Severe Accidents, 50 *Fed. Reg.* 32138, August 8, 1985.)

Instead of applying the § 50.59-like process to all of Chapter 19, we propose (1) that the process be applied only to those sections that identify features that contribute significantly to the mitigation or prevention of severe accidents (i.e., Section 19.8 for the ABWR and Section 19.15 for the System 80+, and (2) that changes in these sections should constitute unreviewed safety questions only if they would result in a substantial increase in the probability or consequences of a severe accident. Each of these two proposals is discussed separately in Sections B and C, below.

**B. Not All of Chapter 19 Should Be Subject to the § 50.59-Like Process**

**1. Controls on Changes to Chapter 19 Are Not Necessary for Adequate Protection of Public Health and Safety**

Initially, it should be noted that controls on changes related to severe accidents and the PRA, by definition, are not necessary to provide adequate protection for the public health and safety. As discussed above, such controls exceed the controls currently applied to changes by Part 50 licensees (who are not required to consider the impacts of changes on the probability or consequences of severe accidents).<sup>3</sup> Further, in its severe accident policy statement (50 *Fed. Reg.* 32138 (1985)), the Commission concluded that additional protection against severe accident risks at nuclear power plants was not necessary to provide adequate protection for the public health and safety. Therefore, controls on changes related to severe accidents and the PRA are not necessary for adequate protection.

Finally, similar to the NRC staff proposal on "applicable regulations," the NRC staff's proposal on the change process related to severe accident evaluations and the PRA is contrary to sound regulatory policy. The ABWR and System 80+ each contain numerous design enhancements, including features to prevent and mitigate severe accidents, that provide for increased margins of safety above and beyond what is required by NRC regulations. Given these increased margins of safety inherent in the designs of these new plants, it is incongruous and inappropriate that new and additional requirements be imposed on these plants by greatly expanding the evaluations required for changes -- requirements that are not imposed on existing plants. In essence, the NRC staff proposal would amount to a

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<sup>3</sup> While not a regulatory requirement, current licensees preserve severe accident insights, consistent with NUMARC 91-04, "Severe Accident Issues Closure Guidelines," by ensuring that changes are made with full cognizance of the severe accident considerations that prompted earlier modifications. (See, NUMARC 91-04, Section 1.4.)

penalty on the industry for designing safer plants and incorporating more extensive safety evaluations in SSARs and DCDs.

2. The Controls on Changes to Chapter 19 Proposed in the NOPRs Are Not Necessary to Comply with Previous Commission Direction

In approving the use of the § 50.59-like process for Tier 2 changes, the Commission indicated that it might be appropriate to expand the historically limited scope of § 50.59 to address severe accidents. However, the staff has taken an extreme interpretation of this Commission guidance. The Commission did not require that every change in or affecting the severe accident analyses and PRA results be evaluated under § 50.59. Instead, the Commission's SRM dated February 15, 1991, stated only that the § 50.59-like change process should ensure the 'preservation of the severe accident ... insights that are part of the certified design."

We have consistently agreed with the Commission that severe accident insights (including PRA insights) should be considered under some form of the § 50.59-like process. (See, e.g., the enclosure to the NUMARC letter to NRC dated October 8, 1992.) Accordingly, industry supports an appropriate expansion of the traditional scope of § 50.59 safety evaluations in the Part 52 design certification rule. Under the expansion that we support, any change in the important features identified in Section 19.8 for the ABWR or Section 19.15 for the System 80+ would be evaluated under the § 50.59-like process to ensure that the change would not result in a substantial increase in the probability or consequences of a severe accident evaluated in Chapter 19.



3. The § 50.59-Like Process Should Not Be Applied to All Chapter 19 Information

For several reasons, it would be inappropriate to apply the § 50.59-like process to all of the severe accident analyses and PRA results in Chapter 19. First, Chapter 19 contains numerous analyses which are intended to demonstrate that certain severe accident conditions and accidents are inconsequential to safety. Thus, Chapter 19 discusses a number of features that are unimportant to preventing or mitigating severe accidents. It is unreasonable to require § 50.59 safety evaluations for changes involving such features.

Additionally, Chapter 19 is very extensive and detailed. For example, Chapter 19 includes analyses of many accident scenarios to demonstrate that they have extremely low probabilities and do not pose a regulatory concern. Thus, Chapter 19 analyzes severe accident scenarios that are of extremely low probability (e.g., with annual frequencies on the order of  $10^{-9}$ ,  $10^{-10}$ , and even lower). The progression of many of these scenarios is affected by components which are not designed or intended to have any safety function. For example, for the ABWR, flooding analyses take credit for leakage through the truck door in the Turbine Building; containment bypass analyses account for closure of the non-safety-related turbine bypass valves; the calculation of the fission product release fraction from the core accounts for the mass of the steam dryer; and the calculation of the severe accident temperatures in the drywell depends upon the mass of equipment in the drywell. It is unreasonable to require a licensee to perform safety evaluations for changes in such parameters. Even if worst case assumptions are made regarding these and numerous similar parameters, the overall conclusions of the evaluations would not change.

In this regard, the severe accident analyses and PRA results in Chapter 19 should be contrasted with the analyses of design basis accidents in



Chapters 6 and 15. The analyses of design basis accidents are dependent upon safety-related components and are based upon conservative analytical assumptions. In contrast, severe accident analyses and PRAs are affected by components with no intended safety function and are based on realistic, *i.e.*, "best estimate," assumptions. Therefore, there is an inherent basis for treating severe accident analyses differently from analyses of design basis accidents.

Thus, given the nature of the analyses for severe accidents in Chapter 19, § 50.59 safety evaluations for changes related to such accidents should be limited to those changes which have an appreciable potential for affecting the conclusions of the analyses.

4. Change Controls to Protect Severe Accident Features  
Should Apply Only to the Important Features

Our proposal to apply the § 50.59-like process only to the important features identified in Section 19.8 for the ABWR and Section 19.15 for the System 80+ is fully in accord with the Commission's previous direction that the § 50.59-like process should preserve severe accident "insights." In contrast, the NRC staff's extreme proposal that the § 50.59-like process be applied to all severe accident and probabilistic evaluations in Chapter 19, *i.e.*, not just to the "insights," would greatly exceed the controls needed to satisfy the Commission's directions and intent.

The NRC staff has argued in the past that the § 50.59-like process should encompass all of Chapter 19 because it is possible that there may be some important features that were inadvertently omitted from Section 19.8 for the ABWR or Section 19.15 for the System 80+. However, the design certification applicants and the NRC staff expended considerable resources in identifying and agreeing upon these important features. Indeed, these sections were expanded as a result of interactions with the staff. In fact, the

design certification applicants paid careful attention to developing these sections based upon initial staff guidance including a letter to NUMARC dated June 20, 1993, to the effect that the DCD would include only these important features rather than all of SSAR Chapter 19. An example DCD Chapter 19 for the ABWR, which focused on important features and was based upon Section 19.8 of the ABWR SSAR, was provided to the NRC staff with a NUMARC letter, dated February 1, 1994. The NRC staff acknowledged in SECY-94-182 that the example information provided "contains a discussion of design features and actions that contribute significantly to the mitigation or prevention of a particular accident sequence or event scenario" and would be an acceptable model for corresponding DCD material for the System 80+. For example, Section 19.8 for the ABWR discusses features identified through the PRA, seismic analyses, fire protection analyses, containment analyses, flooding analyses, shutdown event analyses, and severe accident analyses. Therefore, and given the extensive NRC staff review, the possibility of an omission of an important feature is remote. Furthermore, if the NRC staff believes that these sections omit an important feature, the design certification applicants have expressed their willingness to consider expansion of these sections to include such features.

In any event, even if it is assumed that an important feature were omitted from these sections, it is extremely unlikely that a change to that feature would escape detection under the numerous other change controls that exist. In particular, the following other controls exist for plant-specific changes in the DCD by an applicant or licensee:

- 1) Any change that does not comply with regulations in effect at the time of design certification (e.g. the provisions in 10 CFR Parts 20, 50, 73 and 100) requires an exemption under 10 CFR 50.12.

- 2) Under 10 CFR 52.63(b)(1), any change in a provision in Tier 1 of the DCD requires an exemption and prior NRC approval as part of a license or license amendment.
- 3) Any change in a provision designated as Tier 2\* will require prior NRC approval as specified under Section 8 of the design certification rule.
- 4) Under 10 CFR 52.63(b)(2) and § 50.59, any change to the Technical Specifications requires a license amendment.
- 5) Under 10 CFR 52.63(b)(2) and § 50.59, any change in Tier 2 involving a unreviewed safety question, as traditionally defined in relation to design basis accidents, requires prior NRC approval.

Given (1) our proposed controls on changes to the important severe accident and PRA-based features identified in Section 19.8 for the ABWR and Section 19.15 for the System 80+; (2) the traditional restrictions on changes to the remainder of Tier 2 under § 50.59; and, (3) the other restrictions on changes, it is not credible to believe that an applicant or licensee could make a change that would significantly increase the probability or consequences of severe accidents without being required to seek prior NRC approval. Therefore, there is no practical reason to expand the scope of the § 50.59-like process to include all of the severe accident analyses and PRA results in Chapter 19.

Finally, a requirement to perform a safety evaluation for every change in Chapter 19 would be extremely burdensome on both licensees and the NRC staff with no commensurate safety benefit. Chapter 19 is very extensive; e.g., Chapter 19 for the ABWR consists of three volumes of material. Given the nature of the PRA results and severe accident analyses, essentially every area of the plant is discussed someplace in Chapter 19. Thus, it would be expected under the NRC staff's proposal that numerous plant changes will, in some manner -- however insignificant -- directly affect Chapter 19 and therefore require safety evaluations. Furthermore, changes to the plant and

procedures discussed in other chapters in Tier 2 would also be subject to safety evaluations, and such safety evaluations will need to consider whether there are any indirect impacts on the Chapter 19 analyses. Such consideration would prove extremely burdensome. For example, current plants typically perform many hundreds of § 50.59 safety evaluations of design modifications and changes to procedures and tests each year. Even granting that there will be fewer § 50.59-like changes at future plants, requiring an applicant or licensee to consider all of the Chapter 19 analyses as part of each § 50.59 safety evaluation would necessitate a substantial expenditure of resources with, as previously stated, no commensurate safety benefit. Furthermore, since § 50.59 safety evaluations are reviewed by licensee management, such a requirement would divert management time and attention from more important safety issues. Considering the increased level of safety provided by the ABWR and System 80+, there is no justification for imposing such an additional requirement on these plants.

At a time when the Commission is trying to reduce regulatory burdens that have little or no benefit to safety, it would be totally inconsistent to burden applicants and licensees with a requirement to perform safety evaluations for changes that have little or no potential for affecting safety. In particular, the NRC staff proposal is inconsistent with Vice President Gore's Reinventing Government Initiative, in which the NRC participates, and which is intended to reduce regulations that are not truly necessary for implementing the laws and missions of the respective administrative agency. The resources of both the NRC and licensees would be better spent on matters that are more important to safety than reviewing plant change evaluations of little or no safety significance.



C. The Commission Should Apply a More Suitable Definition of Unreviewed Safety Questions

Section B above addresses the scope of the § 50.59-like process as applied to severe accident and PRA information in Chapter 19 of the DCD. A separate and independent issue involves the criteria to be applied in determining whether changes in such information constitute an unreviewed safety question. This issue is discussed below.

The phrase "unreviewed safety question" should be redefined with respect to changes involving Chapter 19 information. Currently, "unreviewed safety question" is defined in 10 CFR 50.59 as any increase in probability or consequences of an accident. However, Chapter 19 evaluates a wide range of accident sequences, including ones that have extremely low probabilities of occurrence and extremely high consequences, each of which has relatively high uncertainty bands. Changes which cause minor increases in the probability or consequences of these accidents should not be considered an unreviewed safety question because such increases are insignificant and, therefore, there is no reason to require prior NRC approval for such changes. For example, if the probability of an accident evaluated in Chapter 19 were to increase from  $10^{-10}$  to  $10^{-9}$  per year as a result of a change, the impact on safety would be trivial and none of the findings or the conclusions in Chapter 19 or the NRC's Final Safety Evaluation Report would be affected. Therefore, from either a regulatory or safety perspective, minor increases in the probability or consequences of a severe accident should not be defined as unreviewed safety questions.

The probabilities discussed above are provided for the purposes of example only, and are not intended to imply that increases to greater than  $10^{-9}$  would constitute a "substantial increase." Additionally, this discussion is not intended to imply that a probabilistic risk assessment should be performed in conjunction with each



§ 50.59 safety evaluation of a change. Similar to current practice under § 50.59, an evaluation of whether a change would result in a substantial increase in the probability or consequence of a severe accident would be a qualitative one rather than one that is probabilistic or quantitative. For example, if a qualitative evaluation showed that an increase in probability of a severe accident was *de minimis* or within the bound of uncertainty of the probability originally calculated, the increase obviously would not be "substantial," and a probabilistic evaluation would not be necessary. The industry intends to develop a new guideline for performing § 50.59-like safety evaluations that will include guidance regarding consideration of severe accident and PRA evaluations in the DCDs.

Furthermore, defining unreviewed safety question as any increase in probability or consequences of a severe accident would be enormously burdensome to both the industry and the NRC. Changes involving unreviewed safety questions require an internal evaluation, a formal application to the NRC, NRC review and approval, and an opportunity for a hearing. Each of these actions is expensive and requires management attention and resources. Such attention and resources are not warranted for minor changes in probability and consequences of severe accidents, and can be better applied to more important safety issues. Therefore, as applied to severe accidents evaluated in Chapter 19, the Commission should redefine unreviewed safety question as a substantial increase in probability or consequences.

The industry expressed these positions to the NRC staff in the fall of 1994 prior to issuance of the proposed rule. At that time, the staff agreed with the industry's position with respect to defining unreviewed safety question. As approved by NRC senior management in a meeting on November 2, 1994, Section 3.8 of the DCD Introduction for the ABWR states that only a "substantial increase" in the probability or consequences of the severe accidents evaluated in Chapter 19 shall constitute an unreviewed safety question. The proposed rule language, however, is inconsistent with the staff's previous approval of this provision in the ABWR DCD Introduction. Specifically, whereas the DCD Introduction for the ABWR applies the

"substantial increase" standard to Chapter 19, Section 8(b)(5) of the proposed rule applies the "substantial increase" standard only to a small portion of Chapter 19; i.e., to Section 19E for the ABWR and Section 19.11 for the System 80+, plus associated appendices. Since the remainder of Chapter 19 contains extensive probabilistic and deterministic evaluations of severe accidents, the staff's proposed exception provides no meaningful relief. Therefore, the Commission should reject the staff's proposal and instead should apply the "substantial increase" standard to the sections in Chapter 19 subject to the § 50.59-like process, i.e., Section 19.8 for the ABWR and Section 19.15 for System 80+ (as recommended in Section IV.B, above).

D. Evaluation of NOPR Proposal Against the Design Certification Goals of Part 52

- ° Early Resolution of Safety Issues - The NOPR proposal relates to changes by license applicants and licensees and, therefore, does not pertain to this goal.
- ° Standardization - The NOPR proposal does not relate to the achievement of this goal.
- ° Enhanced Protection of Public Health and Safety - As discussed above, severe accident features are not necessary to assure adequate protection of public health and safety and, therefore, the process for controlling changes to such features is likewise not an issue of public health and safety. The industry has proposed to control changes on the important features identified by the severe accident evaluations and the PRA. The industry's proposal is consistent with Commission guidance and will be effective in maintaining the higher level of severe accident safety achieved by the standard designs. The NOPR proposal to expand the scope of Chapter 19 subject to the § 50.59-like process, and to apply the "any" increase standard

for identifying unreviewed safety questions, is unnecessary and inappropriate. The staff proposal would not achieve any significant enhancement to safety and could be detrimental to safety since it would require both the NRC and licensees to divert their attention from safety-significant matters to matters that are relatively unimportant to safety.

- ° More Stable and Predictable Licensing Process - The proposal in the NOPR is inconsistent with this goal. The excessive expansion of the § 50.59 process advocated by the NRC staff would be a source of uncertainty for prospective licensees because of the enormous, but undefined, additional burden that it would entail and the prospect of hearings on changes that insignificantly increase the probability or consequences of severe accidents.

In summary, the approach proposed in the NOPR is not required for -- and could have a negative impact on -- the protection of public health and safety. Moreover, the NOPR proposal would impose enormous and unnecessary burdens on applicants and licensees and be a source of licensing uncertainty.

#### E. Conclusion

We support the preservation of severe accident insights sought by the Commission. To this end, we support expanding the traditional § 50.59 process to encompass changes to the important severe accident and PRA features identified in Section 19.8 for the ABWR and Section 19.15 for the System 80+. It would, however, be inappropriate, burdensome, and unnecessary for the adequate protection of public health and safety to further expand the scope of § 50.59 by subjecting the full extent of severe accident and PRA information in Chapter 19 to the § 50.59-like process. These analyses include discussions of components that perform no safety function and other components whose failure would have an insignificant impact on the probability or consequences of severe accidents. Therefore, the Commission should

revise the design certification rules (and revise the corresponding provisions in the DCD Introduction) to require that only the important features identified in Section 19.8 for the ABWR and Section 19.15 for the System 80+ be evaluated under the § 50.59-like process. On the separate issue of defining "unreviewed safety question," the Commission should adopt the "substantial increase" standard for the Chapter 19 sections subject to the § 50.59-like process, i.e., Sections 19.8 (for ABWR) and 19.15 (for System 80+).

Table 5 suggests changes to Section 8(b)(5) of the proposed rule to accomplish these objectives.

TABLE 5

SUGGESTED REVISION TO SECTION 8(b)(5) OF THE  
PROPOSED RULE RELATED TO THE CHANGE PROCESS FOR SEVERE  
ACCIDENT AND PRA INFORMATION IN CHAPTER 19<sup>4</sup>

§ (5) (i) An applicant or licensee who references the design certification may depart from Tier 2 information, without prior NRC approval, unless the proposed change involves a change to Tier 1 or Tier 2\* information, as identified in the DCD, the technical specifications in an operating license or combined license, or an unreviewed safety question as defined in paragraphs (b)(5)(ii) or (iii) of this section. When evaluating the proposed change, an applicant or licensee shall consider all matters described in the DCD, including generic issues and shutdown risk for all postulated accidents including severe accidents, but excluding the information in Chapter 19 of Tier 2 other than the information in Section 19.8.

(ii) A proposed departure from Tier 2 information, exclusive of severe accident information contained in Chapter 19, shall be deemed to involve an unreviewed safety question if:

(A) The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the DCD may be increased;

(B) A possibility for an accident or malfunction of a different type than any evaluated previously in the DCD may be created; or

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<sup>4</sup> This suggested language applies to the ABWR. Similar language is appropriate for the System 80+.



(C) The margin of safety as defined in the basis for any technical specification in an operating license or combined license is reduced.

(iii) A proposed departure from information associated with severe accident issues identified in Section 19.8 of the DCD shall be deemed to involve an unreviewed safety question if:

(A) there is a substantial increase in the probability of a severe accident such that a particular severe accident previously reviewed and determined to be not credible could become credible; or

(B) there is a substantial increase in the consequences to the public of a particular severe accident previously reviewed.

V. Design Certification Rules Should Provide for Post-Certification Changes by the Design Certification Applicant

A. Introduction

Section 52.63(b)(2) and the proposed design certification rules allow an applicant or licensee to make changes under a process similar to that contained in § 50.59.

However, Part 52 and the proposed rules do not contain a provision that would allow the design certification applicant to make § 50.59-like changes to the standard design after issuance of the design certification.

In the several-year period likely to pass before the first license application is submitted for a standard design in the United States, the detailed designs will be developed by or with the cooperation of the design certification applicants. As a result of detailed design development, § 50.59-like design changes to Tier 2 are likely to be identified. Additionally, such design changes may be identified to address operating experience at existing plants between the time of design certification and the first license application and to account for termination of manufacture of equipment mentioned in Tier 2 of the DCD.

As discussed below, we believe there would be substantial benefits to standardization, economy, and regulatory efficiency if the design certification rules were to include a process by which the design certification applicant could make generic § 50.59-type changes to Tier 2 of the DCD during the multi-year period after the design certification rule is approved and before the first license application is filed.

B. Allowing the Design Certification Applicant to Make § 50.59-Like Tier 2 Changes Would Promote Standardization and Administrative Efficiency

Changing the proposed rules to provide for such post-certification DCD changes by the design certification applicant would have several important benefits. First, having a process for making generic changes to Tier 2 (which would be binding on all license applicants) would ensure a high degree of standardization by minimizing the potential for plant-to-plant differences within the scope of the standard design. Second, the process would be resource-efficient and economical, since only one § 50.59 change for all plants (rather than a § 50.59 change for each plant) would have to be processed. Likewise, the administrative burden on the NRC would be eased because the NRC would have to review a qualifying change only once, rather than repetitively for each license application.

In various meetings with the industry, the NRC staff has expressed a concern that our proposal would be destabilizing because it would allow changes to be made in the standard design. As discussed above, our proposal has precisely the opposite effect and would promote standardization because changes made in accordance with our proposal would be requirements for all plants that reference the design certification. Significantly, the industry proposal pertains only to the period prior to the first license application during which detailed engineering is completed and standardized. Once the first application is submitted, standardization will be maintained through two mechanisms -- the change control process in Section 8 of referenced design certification rules and the industry commitment to life-cycle standardization among a family of standardized designs. The industry commitment to standardization is described in the U.S. nuclear industry's *Strategic Plan for Building New Nuclear Power Plants*, Appendix C, *Position Paper on Standardization* (attached for ease of reference).

C. Changes By a Design Certification Applicant Would Be Tightly Controlled

The types of changes permitted under this proposed process should be limited to conform with the general principles embodied in Part 52. Specifically, under this proposal, changes would be limited to Tier 2 changes that have been evaluated under the § 50.59-like process and determined not to involve either an unreviewed safety question or a change in Tier 1. Thus, changes would be limited to those matters which, by definition, do not adversely affect safety. Furthermore, in order to preserve standardization, changes could only be made prior to the first license application that references the standard design, and such changes would be applicable to all license applicants that reference the design certification.

Additionally, the design certification applicant would be responsible for inventorying proposed generic § 50.59-like changes in Tier 2, for performing the requisite safety evaluations, for submitting the evaluations to NRC, and for effecting the changes that qualify. Table 6 provides suggested language for this process. Because NRC would be notified of the change and be provided with the safety evaluation for the change, the NRC would have an opportunity to review the change. If, based upon its review, the NRC were to conclude that the change involves an unreviewed safety question or a change in Tier 1, the NRC could invalidate the change as being inconsistent with the design certification rule.

To provide closure for each change made via this process and allow the detailed design process to continue with certainty as to the appropriateness of the change -- yet provide the NRC with ample opportunity for reviewing submitted safety evaluations -- changes would be considered resolved and final (not subject to further NRC review) six months after submission, unless the staff informs the design certification applicant that the staff disagrees with the determination that no unreviewed safety question exists.

Additionally, because reports of such changes and summaries of associated safety evaluations would be submitted to the NRC and in turn placed in the NRC's Public Document Room, both the public and prospective license applicants would have full access to information related to the change. In addition, the public will be informed of all such changes through submittal of design change reports and appropriate DCD updates to the NRC as proposed in Table 6.

During meetings with the industry, the NRC staff expressed concerns that this proposal might be construed as depriving the public of an opportunity for a hearing on changes made in accordance with the proposal. However, under this proposal, a change could be made only if the change does not involve an unreviewed safety question under the § 50.59-like process. Thus changes made under the § 50.59-like process do not adversely affect safety, and § 50.59 does not require a hearing for changes made in accordance with the provisions of that section. As discussed in Section I.C.2.a, a member of the public could raise questions regarding such changes via the Section 2.206 (or equivalent process). The Commission would in turn determine whether the change was an appropriate subject for consideration in the COL proceeding. Therefore, this proposal would not deprive the public of any hearing rights provided by NRC regulations; however, the Section 2.206 (or equivalent) process will ensure that only issues related to generic Tier 2 changes that are significant to the NRC's safety finding in the license would be considered as part of the COL proceeding.



D. Evaluation of the Industry Proposal Against the Goals of Design Certification and Part 52

The industry's proposal would promote the goals of Part 52, as discussed in Attachment A. Specifically:

- Early Resolution of Safety Issues - The industry's proposal would provide for the resolution of changes before the first license application is filed. Therefore, it would result in the resolution of changes earlier in the process than is currently provided for in Part 52 or the proposed rules (*i.e.*, under Part 52 and the proposed rules, plant-specific changes cannot be resolved until after a license application is filed). Thus, the industry's proposal would promote the goal of early resolution of licensing issues.
- Standardization - The industry's proposal would promote this goal. Changes made pursuant to the industry's proposal would be binding upon all license applicants referencing the standard design, thereby ensuring that standardization is maintained. In contrast, under the current provisions in Part 52 and the proposed rule, the process does not ensure that changes are adopted by each license applicant.
- Enhanced Protection of Public Health and Safety - The industry's proposal to provide a process for making pre-license application Tier 2 changes does not involve an issue related to public health and safety. Changes implemented under the process proposed will not, by definition, involve unreviewed safety questions.
- More Stable and Predictable Licensing Process - The industry's proposal would promote achievement of this goal. Because the industry's proposal would require a proposed change to be evaluated only once (rather than with

respect to each license applicant), it would provide for a more stable and predictable licensing process as well as one that is clearly more efficient. Additionally, resolution of generic changes prior to the first license application will substantially increase licensing certainty for the prospective licensee about to make a significant financial and resource commitment.

In summary, the industry's proposal does not impact public health and safety and promotes the other three goals of design certification and Part 52.

#### **E. Conclusion**

For the reasons discussed above, we urge the Commission to adopt in the final design certification rules a provision to allow design certification applicants to make generic § 50.59-like changes to Tier 2 prior to the first license application. As discussed above, the industry-proposed process for allowing design certification applicants to make generic changes to Tier 2 in the period prior to the first license application would not impact public health and safety but would significantly enhance the Part 52 process in terms of achieving its other three stated goals, namely, early issue resolution, standardization and licensing predictability and stability. Therefore, we urge the Commission to adopt the industry recommendation as sound NRC policy. Proposed language for consideration in final design certification rules is provided in Table 6.

TABLE 6

PROPOSED DESIGN CERTIFICATION RULE PROVISION TO ALLOW  
DESIGN CERTIFICATION APPLICANTS TO USE § 50.59-LIKE PROCESS

This provision would be added to Section 8 of the proposed rules.

(d) Generic Changes to the DCD by the Design Certification Applicant

(1) Changes to Tier 1 - Any change to Tier 1 proposed by the design certification applicant shall be the subject of a request for proposed rulemaking in accordance with the provisions specified in subsection (a) of this Section.

(2) Changes to Tier 2 - Prior to the first license application that references the DCD, the design certification applicant may make a change to Tier 2, unless the proposed change involves a change in Tier 1 or an unreviewed safety question. Any change by the design certification applicant to Tier 2\* information designated in the DCD shall be subject to prior NRC staff approval.

(i) The design certification applicant shall submit reports of any change in Tier 2 to the NRC. The reports shall describe the change and provide a summary of a safety evaluation which provides the basis for the determination that the change does not involve an unreviewed safety question.

(ii) For changes made hereunder, the design certification applicant shall submit to the NRC an update to the DCD on a replacement-page basis, which shall indicate the area changed, e.g., a bold line vertically drawn in the margin adjacent to the portion changed, and a page change identification (date of change or change number, or both).

(iii) A change made hereunder shall be considered resolved under 10 CFR 52.63(a)(4) unless the NRC determines, within six months of submission of the change, that the change involves an unreviewed safety question as defined in Section 8(b)(5) above.

(iv) A license applicant shall reference and utilize the updated DCD, unless the license applicant makes a change in accordance with the other provisions of this section.

VI. The Substantive Provisions in the DCD Introduction Should Be Incorporated into the Design Certification Rules

A. Introduction

The DCD includes an Introduction that contains numerous substantive provisions that provide directions to future users of the DCD. These provisions in the DCD Introduction are the result of extensive interaction between the NRC staff and the design certification applicants. These include provisions governing compliance with ITAAC, the status of items designated in the DCD as COL information, the use of ITAAC during operation, changes to Tier 2\* information, the status of proprietary and safeguards information, and the status of references to the Standard Safety Analysis Report (SSAR). However, these substantive provisions are not addressed in the proposed rules, and therefore would have no binding effect unless the DCD Introductions are incorporated by reference in the design certification rules or the language of these substantive provisions is added to the proposed rules.

Section III.D of the NOPRs proposes that the design certification applicant's DCD Introduction:

is neither Tier 1 nor Tier 2 information, and is not part of the information in the DCD that is incorporated by reference into this design certification rule. Rather, the DCD introduction constitutes an explanation of requirements and other provisions of this design certification rule. If there is a conflict between the explanations in the DCD introduction and the explanations of this design certification rule in these statements of consideration (SOC), then this SOC is controlling.

We disagree with NRC's proposal to afford the DCD Introductions no legal status other than as an "explanatory" text subordinate to the SOC, which is itself only explanatory text. Treatment of the DCD Introductions in this manner will lead to confusion among the public and future license applicants, will create uncertainty in the licensing process, will result in DCDs that are only partially incorporated into the design certification rules, and will create record-keeping anomalies unnecessary to accomplish the apparent ends desired by NRC staff. Furthermore, there is no



need to single out the DCD Introduction for exclusion from the material incorporated by reference in design certification rules. Such proposed treatment of the DCD Introductions is also directly contrary to previous NRC staff guidance to the applicants on this subject.

The DCD Introduction is an extremely carefully crafted document, and has been fully agreed to by NRC staff. We believe the substantive provisions in the DCD Introduction should be accorded the force of law in the same manner as the design certification rule appendix.

**B. NRC Staff and Office of General Counsel Previously Approved the Text of the DCD Introduction Word-for-Word**

In close consultation with NRC staff, the design certification applicants each spent several months in late 1993 and 1994 on development of the principles and text comprising their respective DCD Introductions. NEI also participated in this process. The DCD Introductions were intended to reflect those principles and agreements between NRC staff and the design certification applicants that were thought to be essential elements of the design certification process, but were not discussed in Part 52 and were not documented anywhere. Accordingly, the final text of the DCD Introduction for each design was very carefully reviewed, revised, and finalized in meetings in the Spring and Summer of 1994 with senior representatives of the NRC (Office of Nuclear Reactor Regulation (NRR) and Office of General Counsel (OGC)) staff. For the ABWR and for System 80+ applicants, public meetings were held with the NRC and OGC staff in October and November of 1994 to finalize the DCD Introductions section-by-section. In the end, the DCD Introduction for each design was agreed to in total by the NRC staff and OGC.

The DCD Introductions were drafted and finalized in the expectation that they would have the status of the rules themselves. Indeed, the DCD Introductions are similar in character to the "General Provisions" sections of the Certified Design Material for each applicant, which has the legal status of Tier 1.



C. The Contents of the DCD Introduction Are Appropriate and Necessary for Inclusion in the Rule

As approved by NRC staff, the description of the DCD is contained in the Introductions themselves. For example, the DCD Introduction for the System 80+ states:

The Design Control Document [DCD] is a repository of information comprising the System 80+ Standard Plant Design ... The Design Control Document contains this Introduction, the Certified Design Material [i.e., "Tier 1"], and the Approved Design Material [i.e., "Tier 2"] for the System 80+ Standard Plant Design.

See, e.g., System 80+ DCD Introduction at p. 1 (emphasis added).

The DCD Introduction describes "the contents and uses of the DCD," id. In addition to the items noted above, the DCD Introduction contains detailed descriptions of the contents and effect of the Certified Design Material (including ITAAC), the Approved Design Material (i.e., Tier 2), Interface Requirements, Site Parameters, COL Information Items, Conceptual Designs, and treatment of Probabilistic Risk Assessment information and severe accident evaluations, among other items. Also, attached to and incorporated within the DCD Introductions are detailed tables listing Tier 2\* information, including expiration dates for Tier 2\* change restrictions (see Section VIII).

The detailed text and descriptions contained in the DCD Introduction, including tables, were prepared with the understanding that they would comprise rulemaking requirements and directions at least as significant as the other portions of the DCD. The purpose of specifying such requirements and clarifications was to minimize uncertainty and ambiguity as to key aspects of the design certification and licensing process.

There is no reason why the substantive provisions in the DCD Introduction should not be afforded the status of the rule. Indeed, if these substantive provisions are not afforded the status of a rulemaking requirement, a substantial legal void would be created as explained further below. This is evident by reading the numerous requirements (examples of which are described in the next section) specified in the DCD Introduction and yet recognizing that, as proposed in the NOPRs, the contents of the DCD Introductions would have no legal force other than as explanatory material.

**D. Inconsistencies Between the SOC's and the DCD Introductions Will Lead to Uncertainty and Confusion**

The proposed rules provide no legal status to the DCD Introduction other than as explanatory material. Instead, the NOPRs include in the SOC's imprecisely paraphrased and incomplete summaries of some, but not all, of the DCD Introduction provisions and state that these SOC are "controlling" in the event of a conflict in explanations between the SOC's and the DCD Introductions. (See NOPR Section III.D). This provision is problematic.

For example, the DCD Introductions for the System 80+ and ABWR each contain the following statement, agreed to by NRC staff and OGC: (See System 80+ DCD Introduction at p. 3.)

after NRC has issued its finding in accordance with 10 CFR 52.103(g), the ITAAC do not, by virtue of their inclusion in the Design Control Document, constitute regulatory requirements for the COL holder or for renewals of the COL.

This statement reflects resolution of an important issue by the NRC staff, OGC and the industry achieved in a public meeting. If this statement is expressly not part of the rule (and thus is not a "requirement"), no certainty is provided in an area that is

of great concern to the industry. The paraphrasing of this NOPR Section III.D statement does little to ameliorate the problem:

After the Commission has made the finding required by 10 CFR 52.103(g), the ITAAC do not constitute regulatory requirements for subsequent modifications.

In contrast with the provision in the DCD Introduction quoted previously, this SOC explanation is, at best, considerably narrower and more uncertain, and, at worst, in contradiction with the DCD Introduction.

There are numerous other imprecise attempts in NOPR Section III.D to paraphrase the text of the DCD Introductions. For example:

- The NOPR and the DCD Introduction for the ABWR have different provisions regarding the change process for severe accident and PRA issues. As described in Section IV.C, above, Section 3.8 of the DCD Introduction for the ABWR establishes the "substantial increase" standard for determining whether a change to or affecting severe accident or PRA information subject to the § 50.59-like process constitutes an unreviewed safety question. In direct contradiction of this agreed upon resolution, the NOPRs disregard the fundamental distinction between design basis and severe accident analyses and events and specify use of the "any" increase standard for the evaluation of whether changes in severe accident and PRA information constitute an unreviewed safety question.
- The NOPR states that a license applicant or licensee must comply with all of the requirements in the DCD, including documents that are referenced in the DCD. (See NOPR Section III.D.) This provision could be construed as being inconsistent with Section 3.7 of the DCD Introduction for the ABWR, which specifies that references to sections of the SSAR shall not be construed as incorporating those sections into the DCD. In fact, the design certification

applicants agreed to the inclusion of references to the SSAR in the DCD on the understanding that the references would not constitute requirements, and those references should be deleted from the DCD if the references are construed as being requirements. Any other result would be inconsistent with the purpose of deleting the referenced SSAR material from the DCD.

- ° The NOPR states that Tier 2 contains explanations and procedures on how to implement ITAAC. (See NOPR Section III.D.) In contrast, the DCD Introduction for System 80+ and ABWR states more accurately that Tier 2 provides "a sufficient but not a necessary method for complying with Tier 1 material." The DCD Introduction has the correct characterization of the status of Tier 2 material vis-à-vis Tier 1 and the ITAAC. The statement in the NOPR blurs the distinction between Tier 2 and Tier 1 and could be interpreted, in essence, as inappropriately incorporating Tier 2 material into Tier 1.
- ° The DCD Introduction has a number of provisions that are not discussed in the NOPR, including provisions related to conformance with ITAAC, Site Parameters, and proprietary and safeguards information. The silence of the Statement of Considerations regarding these provisions could be misconstrued as an indication that these provisions are not valid or not enforceable.

Even if the SOC faithfully reflected the language in the DCD Introduction, provisions in the SOC are not a substitute for binding requirements in the rules. Furthermore, the lack of precision in the SOC detracts from the certainty the industry had assumed was achieved in the extended discussions with NRC staff and OGC leading to the agreed texts of the DCD Introduction for both ABWR and System 80+. Given the considerable effort expended in achieving agreement among the industry, NRC staff, and OGC on the precise text of the DCD Introductions, and

the lack of legally binding effect of the SOCs, it is unfortunate that the DCD Introductions, or, at a minimum, their substantive provisions, are not accorded rule status, thus becoming the controlling document in the event of a conflict. This is especially so in that the DCD Introductions, unlike the NOPR SOCs, were written to the satisfaction of both the industry and NRC staff with the intent to reduce uncertainty in the nuclear licensing process. As proposed, the rules will only erode certainty in many key areas specified in the DCD Introductions.

**E. The NOPR Proposal Is Inconsistent with the Purpose of the DCD**

The NRC staff has consistently characterized the DCD as a "master reference document" or a "repository" of key design certification information. In the words of the Statement of Considerations (See NOPR Section III.D.):

The consolidation of both tiers of information into a Design Control Document (DCD) will provide an effective means of maintaining this information and facilitating its incorporation into the rule by reference.

To create such a master document, and then to specify that an essential and defined portion of it -- the DCD Introduction -- is not legally a part of the document, is to invite confusion and to undermine the purposes for which NRC sought to create a DCD in the first place. This status for the DCD Introduction may also confound licensees, who will be charged with maintaining a legal document through many years of implementation, a portion of which has no discernible legal status.



F. The NOPR Approach Is Contrary to Previous NRC Guidance

Failure to incorporate the DCD Introductions into the design certification rules, and NOPR designation of the SOC's as controlling, is contrary to previous NRC staff guidance which is explicitly referenced in the NOPRs. Indeed, the industry position that the DCD Introduction should be part of design certification was originally based upon and is aptly described by NRC staff guidance related to DCD form and content provided to each applicant dated August 26, 1993:

The staff believes that the DCD should be a self contained document and should not rely on the DCR's [Design Certification Rule's] Statement of Considerations to serve this purpose. It is not expected that future users of the DCD be required to research the Statement of Considerations to gain an understanding of the purpose of the DCD and its role in future licensing actions.

Accordingly, pursuant to the staff's instructions, the industry and the NRC staff (together with OGC) spent considerable time and effort crafting the precise wording of the DCD Introductions. In light of this extensive effort, the industry is deeply concerned that the NRC staff would now propose to relegate the important information in the DCD Introductions to the status of "explanatory material" subservient to the SOC's.

G. Evaluation of the NOPR Proposal Against the Goals of Design Certification and Part 52

The NOPR proposal to exclude the DCD Introduction from design certification rules does not promote, and is inconsistent with, the goals of Part 52, as described in Attachment A. Specifically:

- ° Early Resolution of Safety Issues - The NOPR proposal is inconsistent with this goal. The DCD Introduction is the product of extensive, months long discussions between the design certification applicants and the NRC staff and OGC. The DCD Introduction is the mechanism by which the resolution of a number of very important substantive issues was documented. By not providing the DCD Introduction with any legal status, the NRC staff is, in essence, proposing to defer resolution of these issues to a case-by-case determination in individual licensing proceedings.
- ° Standardization - The NOPR proposal is inconsistent with the achievement of this goal. If the substantive content of the DCD Introductions has no legal status, the substantive issues discussed in the DCD Introduction could be resolved differently in different licensing proceedings, to the detriment of standardization.
- ° Enhanced Protection of Public Health and Safety - The NOPR proposal does not relate to enhancement of safety.
- ° More Stable and Predictable Licensing Process - The NOPR proposal is inconsistent with the achievement of this goal. If the DCD Introduction has no legal status, there would be no certainty that the substantive issues discussed in the DCD Introduction will eventually be resolved in the manner provided therein.

In summary, the question of status for the DCD Introduction is not an issue related to protection of public health and safety. The status proposed by the NOPR is contrary to the other major goals for Part 52, namely, early issue resolution, standardization and licensing predictability/stability.

#### H. Conclusion

We believe that the DCD Introductions should be accorded the status of rulemaking requirements, preferably by incorporating the DCD Introductions by reference in the design certification rule appendix for the respective standard designs. Table 7 suggests changes to the design certification rules to accomplish this objective. In this event, the process for an applicant or licensee departing from the DCD Introduction should be the normal exemption process specified in 10 CFR 50.12. (See, Section 8(c) of the proposed rules.)

If NRC declines to incorporate by reference the DCD Introductions in the design certification rules, we recommend that the substantive provisions of the DCD Introductions be added to the provisions of the rules themselves. Tables 8A and 8B suggest changes to the ABWR and System 80+ design certification rules, respectively, to accomplish this objective.

## TABLE 7

### SUGGESTED CHANGES TO SECTIONS 2 AND 4 OF THE DESIGN CERTIFICATION RULES TO INCORPORATE THE DCD INTRODUCTION<sup>6</sup>

#### § 2. Definitions.

As used in this part:

(a) *Design control document (DCD)* means the master document that contains the DCD Introduction, Tier 1 and Tier 2 information that is incorporated by reference into this design certification rule.

\* \* \*

#### § 4. Contents of the design certification.

(a) The ABWR Design Control Document, GE Nuclear Energy, Revision 3, [ date ] is incorporated by reference. This incorporation by reference is approved by the Director of the Office of the Federal Register on [Insert date of approval] in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the U.S. ABWR DCD may be purchased from [Insert name and address of applicant or organization designated by the applicant]. Copies are also available for examination and copying at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC 20555, and for examination at the NRC Library, 11545 Rockville Pike, Rockville, Maryland 20582-2738.

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<sup>6</sup> This suggested language applies to the ABWR. Similar language is appropriate for the System 80+.

## TABLE 8A

### SUGGESTED CHANGES TO THE ABWR DESIGN CERTIFICATION RULE TO INCORPORATE SUBSTANTIVE PROVISIONS FROM THE DCD INTRODUCTION

#### § 2. Definitions.

As used in this part:

(a) *Design control document (DCD)* means the master document that contains the DCD Introduction, Tier 1 and Tier 2 information that is incorporated by reference into this design certification rule.

(b) *Tier 1* means the portion of the design-related information contained in the DCD that is certified by this design certification rule (hereinafter Tier 1 information). Tier 1 information consists of:

- (1) Definitions and general provisions;
- (2) Certified design descriptions;
- (3) Inspections, tests, analyses, and acceptance criteria (ITAAC);
- (4) Significant site parameters; and
- (5) Significant interface requirements.



TABLE 8A, cont.

The certified design descriptions, interface requirements, and site parameters are derived from Tier 2 information, but may be more general than the provisions in Tier 2. Compliance with the more detailed Tier 2 material provides a sufficient method, but not the only acceptable method, for complying with the more general provisions in Tier 1. However, the methods and provisions specified in Tier 2 shall be followed unless a change is made in accordance with the change processes specified in the design certification rule for the ABWR.

The Design Descriptions in Tier 1 pertain only to the design of structures, systems, and components of the ABWR standard plant and not to their operation, maintenance, and administration. In the event of an inconsistency between Tier 1 and Tier 2, Tier 1 shall govern. Design activities for structures, systems, and components outside the scope of the ABWR standard design may be performed using site-specific design parameters.

(c) *Tier 2* means the portion of the design-related information contained in the DCD that is approved by this design certification rule (hereinafter Tier 2 information). Tier 2 information includes:

- (1) The information required by 10 CFR 52.47;
- (2) The information required for a final safety analysis report under 10 CFR 50.34(b), and
- (3) Supporting information on the inspections, tests, and analyses that will be performed to demonstrate that the acceptance criteria in the ITAAC have been met. Compliance with Tier 2 is a sufficient, but not necessarily the only, method for complying with the ITAAC. The provisions and methods specified in Tier 2 shall be followed unless a change is made in accordance with the change processes specified in the design certification rule for the ABWR.

TABLE 8A, cont.

(4) COL License Information Items, which identify certain matters that need to be addressed by an applicant or licensee referencing the design certification rule for the ABWR. The purpose of these COL License Information Items is to identify the type of information that must be addressed in plant-specific safety analysis reports (SAR) that reference the design certification rule for the ABWR. These COL License Information Items do not establish requirements; rather they identify an acceptable set of information, but not the only acceptable set of information, for inclusion in a plant-specific SAR. An applicant may deviate from or omit these COL License Information items, provided that the deviation or omission is identified and justified in the plant-specific SAR. After issuance of a construction permit or license, the COL License Information items have no further effect to that licensee; instead, the corresponding provisions in the plant-specific SAR are applicable.

(5) Conceptual designs for those portions of the plant which are outside the scope of the ABWR standard design. As provided in 10 CFR 52.47(a)(1)(ix), these conceptual designs are not part of the design certification rule for the ABWR standard design, and do not impose requirements applicable to a license, nor to an application for a license, that references the design certification rule.

(6) References to the ABWR Standard Safety Analysis Report, which shall not be construed as incorporating these sections, or the information therein, in Tier 2.

Tier 2 does not include proprietary and safeguards information from the Standard Safety Analysis Report for the ABWR. This proprietary and safeguards information, or its equivalent, must be included or referenced as part of a license application that references the design certification rule for the ABWR.

TABLE 8A, cont.

- (new) § 10. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC).
- (a) An applicant for or holder of a combined license (COL) that references the design certification rule for the ABWR shall perform and demonstrate conformance with the ITAAC prior to fuel load. With respect to activities subject to an ITAAC, an applicant for a COL may proceed at its own risk with design and procurement activities, and a holder of a COL may proceed at its own risk with design, procurement, construction and preoperational activities, even though the NRC Staff may not yet have agreed that any particular ITAAC have been satisfied. In the event that an activity is subject to and in noncompliance with an ITAAC, the applicant for or holder of a COL shall either take corrective actions to successfully complete that ITAAC or request and obtain NRC approval of a change in or exemption from the ITAAC in accordance with the design certification rule for the ABWR.
- (b) In accordance with 10 CFR 52.103(g), the Commission must find that the acceptance criteria in the ITAAC are met prior to operation. After the Commission has made the finding required by Section 52.103(g), the ITAAC do not constitute regulatory requirements for subsequent plant modifications. However, subsequent modifications must comply with Tier 1 Design Descriptions, unless changes are made in the Tier 1 Design Descriptions in accordance with the change processes in Section 8 of this Appendix. Furthermore, after the NRC has issued its finding in accordance with 10 CFR 52.103(g), the ITAAC do not, by virtue of their inclusion in the Design Control Document, constitute requirements for the COL holder or for renewals of the COL.

## TABLE 8B

### SUGGESTED CHANGES TO THE SYSTEM 80+ DESIGN CERTIFICATION RULE TO INCORPORATE THE SUBSTANTIVE PROVISIONS FROM THE DCD INTRODUCTION

#### 2. Definitions.

As used in this part:

(a) *Design Control Document (DCD)* means the master document that contains the DCD Introduction, Tier 1 and Tier 2 information that is incorporated by reference into this design certification rule.

(b) *Tier 1* means the portion of the design related information contained in the DCD that is certified by this design certification rule (hereinafter Tier 1 information). Tier 1 information consists of:

- (1) Definitions and general provisions;
- (2) Certified design descriptions;
- (3) Inspections, tests, analyses, and acceptance criteria (ITAAC);
- (4) Significant site parameters; and
- (5) Significant interface requirements.

The certified design descriptions, interface requirements, and site parameters are derived from Tier 2 information, but may be more general than the provisions in Tier 2. Compliance with the more detailed Tier 2 material provides a sufficient method, but not the only acceptable method, for complying with the more general design provisions in Tier 1. However, the methods and provisions specified in Tier 2 shall be followed unless a change is made in accordance with the change processes specified in the design certification rule for the System 80+ Standard Plant Design.

**TABLE 8B, cont.**

The Design Descriptions in Tier 1 pertain only to the design of the structures, systems and components of a System 80+ Standard Plant Design and not to their operation, maintenance and administration. In the event of an inconsistency between Tier 1 and Tier 2 material, Tier 1 shall govern. Design activities for structures, systems, and components outside the scope of the System 80+ Standard Plant Design may be performed using site-specific design parameters.

(c) *Tier 2* (referred to in the DCD as "Approved Design Material") means the portion of the design-related information contained in the DCD that is approved by this design certification rule (hereinafter Tier 2 information). Tier 2 information includes:

- (1) The information required by 10 CFR 52.47;
- (2) The information required for a Final Safety Analysis Report under 10 CFR 50.34(b);
- (3) Supporting information on the inspections, tests, and analyses that will be performed to demonstrate that the acceptance criteria in the ITAAC have been met. Compliance with Tier 2 is a sufficient, but not necessarily the only, method for complying with the ITAAC. The provisions and methods specified in Tier 2 shall be followed unless a change is made in accordance with the change process specified in the design certification rule for the System 80+ Standard Plant Design;
- (4) COL Information Items, which identify certain matters that need to be addressed by an applicant or licensee referencing the design certification rule for the System 80+ Standard Plant Design. The purpose of these COL Information Items is to identify the type of information that must be addressed in plant-specific Safety Analysis Reports (SARs) that reference the design certification rule for the System 80+ Standard Plant Design. These COL Information Items do not establish requirements; rather, they identify an acceptable set of information but not the only



TABLE 8B, cont.

acceptable set of information, for inclusion in a plant-specific SAR. An applicant may deviate from or omit these COL Information Items provided that the deviation or omission is identified and justified in the plant-specific SAR. After issuance of a construction permit or license, the COL Information Items have no further effect for that licensee; instead, the corresponding provisions in the plant-specific SAR become applicable.

(5) Conceptual designs for those portions of the plant that are outside the scope of the System 80+ Standard Plant Design which are described and designated as out-of-scope in various locations within Tier 2. As provided by 10 CFR 52.47(a)(1)(ix), these conceptual designs are not a part of the design certification rule for the System 80+ Standard Plant Design, and do not impose requirements applicable to a license, nor to an application for a license, that references the design certification rule for the System 80+ Standard Plant Design.

(6) References to the System 80+ Standard Safety Analysis Report, which shall not be construed as incorporating these sections, or the information therein, within Tier 2.

Proprietary references or their equivalent, provided in the application for design certification but not included in the DCD, must be either referenced by or included in the COL Application.

TABLE 8B, cont.

§ (10) Inspections, Test, Analyses, and Acceptance Criteria (ITAAC).

- (a) An applicant for or holder of a combined license (COL) that references the design certification rule for the System 80+ Standard Plant Design shall perform and demonstrate conformance with the ITAAC prior to fuel load. With respect to activities subject to an ITAAC, an applicant for a COL may proceed at its own risk with design and procurement activities, and a holder of a COL may proceed at its own risk with design, procurement, construction, and preoperational activities, even though the NRC Staff may not yet have agreed that any particular ITAAC has been satisfied. In the event that an activity is subject to and in nonconformance with an ITAAC, the applicant for or holder of a COL shall either take corrective actions to successfully complete that ITAAC or request and obtain NRC approval of a change in or exemption from the ITAAC in accordance with the design certification rule for the System 80+ Standard Plant Design.
- (b) In accordance with 10 CFR 52.103(g), the Commission must find that the acceptance criteria in the ITAAC are met prior to operation. After the Commission has made the finding required by Section 52.103(g), the ITAAC do not constitute regulatory requirements for subsequent plant modifications. However, subsequent modifications must comply with Tier 1 Design Descriptions, unless changes are made in the Tier 1 Design Descriptions in accordance with the change processes in the design certification rule for the System 80+ Standard Plant Design. Furthermore, after the NRC has issued its finding in accordance with 10 CFR 52.103(g), the ITAAC do not, by virtue of their inclusion in the Design Control Document, constitute regulatory requirements for the COL holder or for renewals of the COL.

## VII. Additional Aspects of the Proposed Change Process Implementation Should Be Modified

### A. Introduction

Part 52 establishes a two-tier structure for controlling changes to a standard design by an applicant or licensee.

- ° Tier 1 (also referred to as the certified design) includes the top-level design criteria and performance standards and ITAAC. Under 10 CFR 52.63(b)(1), changes may be made in the certified design by an applicant or licensee only with prior NRC approval in the form of an exemption.
- ° Tier 2 (also referred to as the approved design) is essentially equivalent to the SSAR minus proprietary and safeguards information and the details of the PRA. Under 10 CFR 52.63(b)(2), changes may be made in this design information without prior NRC approval subject to 10 CFR 50.59 (and provided that the change does not also involve a change to Tier 1). As discussed previously, § 50.59 permits a change to be made unless the change involves a change in the technical specifications or an unreviewed safety question.

Despite the clear provisions in § 52.63(b)(2) and § 50.59, the NRC staff has proposed in the NOPR that a number of controls be imposed on Tier 2 changes that are inconsistent with or in addition to the controls specified in § 52.63(b)(2) and § 50.59. In particular, language in Section III.H of the NOPR Statements of Consideration identifies additional criteria for the 50.59-like process, and this language must not be included in the final rules. Also, the staff is proposing that exemptions be obtained for certain types of Tier 2 changes, and that summaries of changes made under § 50.59 be reported more frequently than provided in Section § 50.59. Furthermore, the staff has suggested that § 52.63(b)(2) be deleted from Part 52. For

the reasons discussed below, we believe that these proposals by the staff are inconsistent with § 52.63 and § 50.59 and should be rejected by the Commission.

**B. The NOPRs Contain Erroneous Statements As To When Prior NRC Approval Is Required for Tier 2 Changes Under the § 50.59-Like Process**

The Statements of Consideration for the NOPRs state that an applicant or licensee who references the design certification must obtain prior NRC approval for departures from Tier 2 information "if the change involves issues that the NRC staff has not previously approved" or "if changes were made to the DCD that violated [NRC's] resolutions without NRC approval." (See NOPR Section III.H.) These statements are in error, or at least misleading. To be consistent with 10 CFR 52.63(b)(2), Section 8(b)(5)(i) of the proposed design certification rules, and 10 CFR 50.59, these statements must not be included in the final rules.

Section 50.59 requires prior NRC approval only for "... proposed changes, tests, or experiments that involve a change to the technical specifications incorporated in the license or an unreviewed safety question." Similarly, Section 8(b)(5)(i) of the proposed rules states:

An applicant or licensee who references the design certification may depart from Tier 2 information, without prior NRC approval, unless the proposed change involves a change to Tier 1 or Tier 2\* information, as identified in the DCD, the technical specifications, or an unreviewed safety question . . . .

Both 10 CFR 50.59 and Section 8(b)(5) of the proposed rule define "unreviewed safety question" in terms of the impact of the change upon safety: i.e., whether the change involves 1) an increase in probability or consequences of an accident, 2) a new or different kind of accident, or 3) a decrease in the margin of safety. Neither of these sections defines unreviewed safety question in relation to whether issues have been previously approved or resolved by the NRC. Thus, for example, under

traditional § 50.59 practice, even if a change involves an issue not previously approved by the NRC, the change would not necessarily involve an unreviewed safety question. The change would not require prior NRC approval unless the change involves a change to plant Technical Specifications or falls within one of the three criteria for an unreviewed safety question.

The final design certification rules must not contain the erroneous statements in order to be consistent with § 50.59 and over thirty years of practice in its implementation. Section 50.59 has proven its value in practice, and there is no compelling reason to fundamentally alter this practice. Additionally, the additional criteria identified in the NOPRs are not necessary for safety, since the three criteria in § 50.59 ensure that changes that involve issues not previously approved by NRC will not adversely affect safety. Finally, the provisions in the NOPR could actually be contrary to safety since they might discourage applicants and licensees from making improvements involving matters not previously reviewed and approved by the NRC.

On a more practical level, the language in the NOPRs would have a significant adverse impact on the ability of applicants and licensees to utilize the § 50.59-like process. By definition, a § 50.59-type change involves a departure from a provision that has previously been reviewed and approved by the NRC. As a result such changes generally involve matters that have either not been previously approved by NRC or involve a resolution that is different from the resolution discussed in the FSER. Therefore, given the language in the NOPR, applicants and licensees would be unable to make most changes without first seeking prior NRC approval. Obviously, this result would be contrary to Section 50.59 and the intent of the Commission in adopting the 50.59-like process for Tier 2 changes.

At the May 11, 1995, public meeting on the NOPRs, NEI noted the inconsistency in the NOPR statements and asked if the NRC had intended, as the noted statements clearly suggest, to establish via these design certification rulemakings an additional



criterion for the § 50.59-like process. In response, Mr. Wilson of the NRC staff stated, "when we were writing that, we weren't intending to characterize a new criterion or different criterion" (Meeting transcript pg. 13).

While we are gratified that the NRC staff did not intend to create a new criterion (evidenced also by the appropriate wording of Section 8(b)(5)(i)), the noted NOPR statements must be deleted to avoid confusion in the future on this topic.

It should be noted that Mr. Wilson continued his response to the NEI question by saying that the intent of the noted NOPR statements was to provide "an explanation of the existing (§ 50.59) criteria." He went on to say "if a utility that references this certified design was changing something in Tier 2 and identified a new issue that wasn't described in Tier 2, then by definition, that's an unreviewed safety question." However, these remarks do not provide an accurate explanation of existing practice under § 50.59. This is because as noted above, a change that involves an issue not previously approved by the NRC would not necessarily constitute a unreviewed safety question. Under existing practice, and in the future under the § 50.59-like process, an unreviewed safety question will be defined to exist only if a change involves (1) an increase in the probability or consequence of an accident, (2) a new or different kind of accident or (3) a decrease in the margin of safety.

In summary, the noted statements in the NOPR are erroneous in that they are inconsistent with the proposed rule, Section 52.62(b)(2), Section 50.59, and long-standing practice under § 50.59. Therefore, these statements must not be included in the Statement of Considerations for the final design certification rules.

C. Exemptions Should Not Be Required for Changes to Technical Specifications or Changes to Tier 2\* that Do Not Involve an Unreviewed Safety Question

Section 8(b)(4) of the proposed design certification rule states that an applicant or licensee who references the design certification may request an exemption from Tier 2 information. Taken together, Section 8(b)(5)(i) and Section 8(b)(4) of the proposed rule could be read to require exemptions for changes to Tier 2\* and the technical specifications in the license as well as for Tier 2 changes involving an unreviewed safety question. As stated in NUMARC's December 30, 1993, comments on the Advanced Notice of Proposed Rulemaking on design certification, the industry supports the need for an exemption where a § 50.59 safety evaluation identifies the need for prior NRC approval (*i.e.*, for unreviewed safety questions). However, we recommend that Section 8(b)(5)(iv) of the proposed rule be revised to clearly state that exemptions are not required for changes to the technical specifications or Tier 2\* that do not involve an unreviewed safety question.

We believe that requiring an exemption for changes to the technical specifications and changes to Tier 2\* that do not involve an unreviewed safety question would, at least partially, be inconsistent with established NRC regulations in Part 52. Specifically, § 52.63 does not require an exemption for technical specification changes. Moreover, the technical specifications are part of the license for a plant referencing the design certification. Changes to these technical specifications should be treated similarly to changes to the technical specifications for Part 50 plants, *i.e.*, such changes should only be subject to an application for a license amendment and should not require an exemption. (See also Section IX.)

Similarly, Tier 2\* changes should not require an exemption unless they also involve an unreviewed safety question. It would be inconsistent to require exemptions for Tier 2\* changes that do not involve an unreviewed safety question when exemptions are not required for other Tier 2 changes that do not involve an unreviewed safety question.

Based on the above, we recommend that the NRC revise Section 8 to clearly state that exemptions are not required for changes to the technical specifications or Tier 2\* that do not involve an unreviewed safety question. Table 9 suggests language for the design certification rules to accomplish this objective.

**TABLE 9**

**SUGGESTED CHANGES TO SECTION 8(b)(5)(iv) OF THE  
DESIGN CERTIFICATION RULES TO LIMIT THE NEED  
FOR EXEMPTIONS FOR TIER 2 CHANGES**

(iv) Departures from Tier 2 information made in accordance with Section 8(b)(5) above, technical specification changes, and Tier 2\* changes that do not involve an unreviewed safety question, do not require an exemption from this design certification rule.

D. Quarterly Reporting of § 50.59 Changes is Unnecessary and Overly Burdensome

Section 9(b) of the proposed rule establishes reporting requirements for changes made by applicants or licensees that reference the design certification rule. Specifically, Section 9(b) requires applicants and licensees to submit reports to the NRC containing a description of any departures from the DCD, including a summary of the safety evaluation of each change. The NOPR also states that, prior to operation, the holder of a construction permit or a COL must file these § 50.59 change reports each quarter. The NOPR states that quarterly reporting of design changes during the period of construction is necessary to enable the NRC to tailor its inspection program for determining that the ITAAC have been satisfied. (See NOPR Section III.I.) For the reasons discussed below, we believe the requirement for quarterly reporting imposes unnecessary additional burdens on licensees and the NRC.

First, § 50.59 requires Part 50 licensees to submit summaries of § 50.59 changes only once every 1 to 2 years. There is no reason to require a four to eight-fold increase in such reports for plants under construction. Because construction itself cannot impact the public health and safety, an increase in reporting frequency during construction will not have any benefits to safety and will only serve to increase the cost of constructing nuclear plants.

Second, the argument that quarterly reports of changes will facilitate ITAAC implementation inspections does not have merit. Quarterly § 50.59 reports will clearly not be the primary mechanism for NRC-licensee coordination on ITAAC verification activities. Close coordination between NRC on-site inspectors and licensee personnel on construction plans, progress and schedules will ensure NRC staff awareness of licensee activities and allow the staff to make any necessary adjustments to its inspection plans in real time. Thus quarterly change reports will not be a principal source of NRC staff information relative to ITAAC inspections.



Furthermore, Section 9 of the proposed rules requires the licensee to maintain records of all changes to and departures from the DCD for the life of the plant. Thus, NRC will at all times be able to determine what changes have been made by the licensee. Accordingly, quarterly reporting of changes is unnecessary and burdensome for both licensees and the NRC.

The Commission should delete the quarterly reporting requirement in Section 9(b)(2) for changes made between COL issuance and the Commission's § 52.103(g) finding. To the extent that the Commission believes that increased reporting may be warranted during this period and must be specified in the design certification rules, we urge the Commission to adopt a less onerous requirement (e.g., semi-annual reports).

In the alternative, because this provision pertains to a requirement on licensees, we recommend the Commission defer a decision on this point for future consideration along with other COL issues. We would prefer deferral of this issue to having the Commission, without the benefit of careful consideration in the context of related COL issues, take a position in these design certification rules that would be binding, inefficient and unduly burdensome for future licenses.

**E. Contrary to the NOPR, Section 52.63(b)(2) Is Directly Applicable to and Is the Basis for the Change Process for Tier 2**

The NOPR states that there does not appear to be a need for 10 CFR 52.63(b)(2) in a two-tiered rule structure. (See NOPR Section II, Topic 6.) Although the NRC staff does not propose to take any action related to this section at this time, we believe this statement is incorrect and in conflict with the two-tier structure concept. This NOPR statement should not be included in the Statement of Considerations for the final design certification rules.

When Part 52 was written, § 52.63(b)(1) was intended to be the change process for the certified design, and Section 52.63(b)(2) was intended to be the change process for information that was not referenced in the design certification rule (non-certified information). Thus, as written, § 52.63(b) clearly embodies a two-tier structure. Under the two-tier structure that ultimately developed, § 52.63(b)(1) controls changes to Tier 1 while § 52.63(b)(2) controls changes to Tier 2. Thus, § 52.63(b)(2) still serves a valuable purpose.

We believe there is a definite need for § 52.63(b)(2). It provides an important underpinning for the two-tier structure and thus for the design certification rules. Therefore, we ask the Commission to delete the cited statement in drafting the Statement of Considerations for the final design certification rules.

**F. Evaluation of the NOPR Proposals Against the Goals of Design Certification and Part 52**

None of the NOPR proposals discussed in this section relate to the protection of public health and safety. Neither do they promote the other identified goals of design certification and Part 52, as described in Attachment A. Specifically, none of the proposals will assist in the early resolution of safety issues, result in greater standardization, or result in a more stable and predictable licensing process.

**G. Conclusion**

In light of the negative impacts of the NOPR proposals discussed in this section, and because the proposals do not relate to the protection of public health and safety, we urge the Commission to adopt the industry recommendations.

## VIII. Proposed Change Process Restrictions on Information Designated Tier 2\* Should Be Modified

### A. Introduction

As part of its approval of the design certification applications, the NRC staff created a concept called "Tier 2\*". The Tier 2\* concept was an outgrowth of the staff's review of the design certification applications, during which the NRC staff concluded that there were certain provisions in Tier 2 that were not sufficiently important to warrant inclusion in Tier 1 yet should not be changed without prior NRC approval. The staff designated these provisions as Tier 2\*. The proposed rules state that these Tier 2\* provisions may not be changed without prior NRC approval (even if the change does not involve an unreviewed safety question).

In general, the Tier 2\* restrictions pertain to detailed design methodologies, including methodologies for satisfying so-called "design acceptance criteria" (DAC), for areas in which detailed design information was not developed for design certification due to the lack of as-procured and as-built data or rapidly changing technology. The DCD Introductions for the ABWR and the System 80+ contain tables which identify the areas designated as Tier 2\*, and these tables specify whether the special Tier 2\* change restrictions apply for the life of the plant or expire at first full power.

As discussed below, the NRC staff was not consistent in formulating the expiration periods for the Tier 2\* restrictions, with some restrictions expiring at first full power and others continuing indefinitely, and with differences in expiration periods for corresponding design areas of the ABWR and System 80+. The industry believes that all Tier 2\* restrictions should expire at first full power for a plant that references a design certification, and requests that the design certification rules and the DCD Introductions be modified to provide for consistent treatment of the Tier 2\* expiration periods.

**B. Consistent Treatment Should Be Provided for Tier 2\* Restrictions, With All Such Restrictions Expiring at First Full Power**

**1. All Tier 2\* Restrictions Should Expire at First Full Power**

With a few exceptions, the NRC staff stated that the Tier 2\* restrictions would expire at first full power. The reason for such expiration is straightforward - - the Tier 2\* restrictions pertain to design methodologies rather than the detailed design. By the time of first full power, the detailed design will have been fully developed in accordance with the Tier 2\* provisions, and the Tier 2\* restrictions will have served their purpose and can expire.

However, the Staff has stated that the Tier 2\* restrictions related to piping design acceptance criteria and human factors engineering (and, for the ABWR, equipment seismic qualification methods and reactor core acceptance criteria) will apply for the life of the plant. Because these restrictions also pertain to design methodologies (rather than the detailed design), there is no reason to distinguish these restrictions from the balance of the Tier 2\* restrictions. Therefore, to provide for consistent treatment of the Tier 2\* provisions, the industry requests that the DCD Introductions be modified to state that all of the Tier 2\* restrictions expire at first full power. It should be noted that only the Tier 2\* restrictions, *i.e.* the requirement for prior NRC staff approval, are proposed to expire at first full power. The other Tier 2 change controls under Section 8(b)(5)(i) would remain in effect for the life of the plant and would apply to the provisions originally designated Tier 2\*. Table 10 suggests language for implementing the industry recommendation in the design certification rules.



2. The Tier 2\* Restrictions for the ABWR Should In Any Event Be Modified To Be Consistent with the Tier 2\* Restrictions for the Same Subjects for the System 80+

In general, the NRC staff designated the same subjects to be Tier 2\* for both the ABWR and the System 80+. However, for reasons that are unknown, the staff stated that the Tier 2\* restrictions related to equipment seismic qualification methods and reactor core acceptance criteria should apply for the life of the ABWR, but stated that the corresponding restrictions for the System 80+ should expire at first full power. There is no basis for specifying different expiration periods for Tier 2\* restrictions for the ABWR versus the System 80+. Therefore, the ABWR DCD Introduction should be modified to make its Tier 2\* expiration periods consistent with those for the System 80+, and, as discussed above, all Tier 2\* restrictions should expire at first full power.

C. Evaluation of the NOPR Proposal Against the Goals of Design Certification and Part 52

- Early Resolution of Safety Issues - The NOPR proposal is not related to this goal.
- Enhanced Protection of Public Health and Safety - The NOPR proposal is not needed to achieve this goal. Because the Tier 2\* provisions relate to design methodologies, the Tier 2\* restrictions will have served their purpose after the detailed design is completed.
- Standardization - The proposal is not related to standardization.
- More Stable and Predictable Licensing Process - The NOPR proposal is inconsistent with this goal. By designating inconsistent expiration periods for the Tier 2\* provisions and continuing the Tier 2\* restrictions longer than necessary, the proposal only makes the



licensing process more complex and burdensome and increases uncertainty as to the acceptability of changes.

In summary, to minimize confusion and complexity, the Commission should reject the NOPR proposal and should provide for consistent treatment of all Tier 2\* restrictions, with all such restrictions expiring at first full power.

#### D. Conclusion

The NRC staff has not provided appropriate expiration periods for the Tier 2\* restrictions, making them longer than necessary, and has treated the Tier 2\* for the ABWR and System 80+ inconsistently with no justification for doing so. Because the Tier 2\* restrictions will have fulfilled their purpose upon completion of construction, the Commission should modify the proposed design certification rules and the DCD Introductions to state that all Tier 2\* restrictions expire at first full power.

TABLE 10

ADDITIONAL SENTENCES FOR SECTION 2(d) OF THE PROPOSED RULES TO  
PROVIDE FOR THE EXPIRATION OF TIER 2\* RESTRICTIONS

The restrictions on changes to Tier 2\* information expire at first full power for a plant that references this design certification rule. Thereafter, changes to the Tier 2\* information shall be controlled in the same manner as changes to other Tier 2 information.

IX. The Process Envisioned by the NRC Staff for Development and Control of Plant Technical Specifications Is Unnecessary and Will Cause Confusion

A. Introduction

In a June 27, 1995, meeting, the NRC staff clarified that the term "technical specifications" as used in Sections 8 and 9 of proposed design certification rules is intended to refer to the proposed technical specifications contained in Chapter 16 of Tier 2 of the ABWR and System 80+ DCDs. Sections 8 and 9, among other things, state that prior NRC staff approval is required for changes to "technical specifications." The staff went on to describe that a plant which references a design certification would have two sets of technical specifications associated with its license, (1) technical specifications based on Chapter 16 of Tier 2 of the DCD and applicable to the standardized portion of the plant, and (2) those technical specifications applicable to the site-specific portion for the plant. The staff added that each set of technical specifications would be subject to a different change process -- the technical specifications for the standard portion of the plant DCD would be subject to the change process in the design certification rule, while the technical specifications in the license would be subject to the change process in Part 50.

B. There Should Be Only One Set of Technical Specifications Subject to One Change Process

The process described by the NRC staff is unnecessarily complex and would inevitably lead to confusion on the part of both licensee and NRC personnel who will be responsible for implementing, interpreting, and maintaining the plant technical specifications. As a practical matter, there must be a single set of integrated technical specifications governing the operation of each plant that is controlled by a single change process, not two sets of partial technical specifications with differing change processes. A single set of technical specifications is essential for clarity, operational certainty, maintainability, and economy. In contrast, the situation

envisioned by the NRC staff would require operators, NRC inspectors, and other affected personnel to shift between two separately maintained sets of technical specifications to identify applicable requirements and determine the appropriate course of action. The additional complexity, burden, and stress caused by use of dual sets of technical specifications would increase the potential for operator errors. We see no justification for adopting the bifurcated approach described by the NRC staff.

In fact, Chapter 16 of Tier 2 of the DCDs for the ABWR and System 80+ was never intended to be used as the technical specifications applicable to operation of a plant. Instead, Chapter 16 contains "proposed" technical specifications. As stated in Chapter 16 for the ABWR, these proposed technical specifications in Chapter 16 contain numerous blanks, e.g., for setpoints, the values for which are dependent upon as-built and as-procured information. Thus, the proposed technical specifications in Chapter 16 of Tier 2 are not usable by personnel in the field in their current form. Given the condition of the proposed technical specifications in Chapter 16, the only reasonable course of action is to require an applicant for a COL or operating license (OL) to submit as part of its application a complete set of proposed technical specifications for approval by the NRC and attachment to the license. After issuance of the license, the proposed technical specifications in Tier 2 would cease to have any regulatory significance, and instead, the technical specifications attached to the license would be the controlling document.

The technical specifications submitted with license applications referencing a design certification rule will include the proposed technical specifications in Chapter 16 of Tier 2, including any changes made in accordance with the change process for Tier 2 material, plus supplementary site-specific technical specifications developed by the license applicant. The resulting integrated set of proposed technical specifications will be subject to NRC review and opportunity for hearing as part of the license proceeding. Because Chapter 16 of Tier 2 has finality under 10 CFR 52.63(a)(4), the matters subject to NRC review and hearing will be limited to the site-specific

portions of the technical specifications and any changes made by the license applicant in the proposed technical specifications in Chapter 16 of Tier 2. This set of technical specifications, including any modifications resulting from the license proceeding, will be incorporated into the license as the governing technical specifications for the plant. Licensees will be able to make changes to the plant technical specifications in the license by requesting a license amendment pursuant to 10 CFR 50.90, the same process as for current licensees.

There is no need to require separate and different change controls for the technical specifications for the technical specifications for the standard portion of the plant vis-à-vis the technical specifications for the site-specific portion. In particular, there is no need - - either before or after license issuance - - to require that an exemption from the design certification rules be sought in order to change the proposed technical specifications in Chapter 16 of Tier 2. (See Section VII.C, above).

C. Evaluation of the Process Envisioned by the NRC Staff Against the Goals of Design Certification and Part 52

- Early Resolution of Safety Issues - The NRC staff's envisioned approach to control of technical specifications is not needed to achieve this goal. A complete set of plant technical specifications will be submitted by license applicants for NRC approval and public hearing as part of the license proceedings. The technical specifications submitted for the standard portion of the plant will be considered resolved in the licensing proceeding, i.e., not subject to NRC review and public hearing, except for any changes made by the license applicant in the proposed technical specifications in Chapter 16 of Tier 2.



- Enhanced Protection of Public Health and Safety - The NRC staff approach would be inconsistent with this goal. Establishing two sets of technical specifications for a plant would increase the burden and complexity on operators, which in turn would increase the potential for errors.
- Standardization - The NRC staff approach is not needed for standardization. Under the industry's proposal, the proposed technical specifications in Tier 2 would be applicable to all license applicants referencing a given design certification. These technical specifications (for the standard portion of the plant) would have finality under § 52.63(a)(4), thereby promoting standardization. Because of the industry commitment to standardization, if there are changes granted the first licensee from the proposed technical specifications in Tier 2 of the referenced DCD, it is expected that those changes would be adopted by subsequent licensees referencing the same standard design. Thus except for site-specific information, the technical specifications for plants of a given standard design will be standardized.
- More Stable and Predictable Licensing Process - The NRC staff approach would be inconsistent with this goal because two sets of technical specifications would be unduly complex and burdensome for each plant to implement and maintain.

#### D. Conclusion

Requiring use and maintenance of bifurcated technical specifications pertaining to the standard and site-specific portions of the plant, as envisioned by the NRC staff, would be burdensome and would increase the potential for errors. To ensure a workable process for development, control, and implementation of technical specifications, the following process should be established:

- (1) The proposed technical specifications in Chapter 16 of Tier 2 must be used by a license applicant to develop a single, integrated set of technical specifications for submittal with license applications. The technical specifications based on Chapter 16 of Tier 2 for the standard portion of the plant have finality except that any change made by a license applicant from the proposed (Chapter 16) technical specifications will be subject to NRC review and hearing as part of the license proceeding. Because such changes are subject to NRC review and hearing opportunity, there is no need for license applicants to also seek exemptions for those changes.
- (2) After a license is granted, there must be a single set of integrated plant technical specifications that will be controlled by the § 50.90 license amendment process. There is no need to require separate and different change controls, e.g., exemptions, to control the technical specifications based on Chapter 16 of Tier 2 for the standard portion of the plant vis-à-vis the technical specifications for the site-specific portion.

Table 11 suggests language for the design certification rules to accomplish these objectives. The Commission should also modify Sections 8 and 9 of the design certification rules to substitute the term "technical specifications in an operating license or combined license" in place of the term "technical specifications" to make it clear that there are not two sets of technical specifications with different change processes applicable to a licensee.

TABLE 11

ADDITIONAL PROVISION FOR SECTION 2(c) OF THE PROPOSED RULES  
TO CLARIFY THE STATUS OF THE PROPOSED TECHNICAL  
SPECIFICATIONS IN CHAPTER 16 OF TIER 2

2(c)(7) Proposed technical specifications for the portion of the plant within the scope of the standard design. These proposed technical specifications are applicable to an applicant for a combined license or operating license referencing this design certification rule, and shall be incorporated in the technical specifications in the license, except as changed pursuant to the provisions in Section 8 of this design certification rule that apply to changes in Tier 2 information. Changes in the proposed technical specifications by a license applicant are subject to NRC review and approval and a hearing as part of the license proceeding. After issuance of the combined license or operating license, the proposed technical specifications in Tier 2 have no further effect as to that licensee, and the technical specifications in the license become effective.

Note:

See Tables 8A and 8B for additional suggested provisions for Section 2(c) of the design certification rules.

X. ITAAC Should Not Be Applicable to Part 50 Applicants and Licensees

A. Introduction

Section 4(b) of the proposed design certification rules for System 80+ and the ABWR state that:

[a]n applicant for a construction permit, operating license, or combined license that references this design certification must reference both Tier 1 and Tier 2 of the [ABWR/System 80+] DCD.

Tier 1 and Tier 2 of each applicant's DCD will, of course, be incorporated by reference into the respective rules. (See proposed rules, Section 4(a).) Thus Sections 4(a) and (b) implicitly require adherence to ITAAC for Part 50 licensing, since ITAAC are in Tier 1.

Furthermore, according to the Statements of Consideration (See NOPR Section III.D) accompanying the ABWR and System 80+ proposed rules, an applicant for a construction permit or operating license who intends to reference a design certification under Part 50 would be required by proposed rule Sections 4(a) and 4(b) to meet the ITAAC for the certified design, even though ITAAC are not requirements under Part 50. NRC also invites comments (See NOPR Section III.J) on a variety of questions concerning the status of the design certification in the context of Part 50 licensing.

We strongly object to the NOPR proposal. The design certification provisions in Part 52 expressly preserve an applicant's option to seek licensing under Part 50. An applicant under Part 50 should not be required to meet ITAAC, which are independent requirements entirely created for the purpose of combined licenses under Part 52. ITAAC have no independent purpose or applicability in the Part 50 context. Under Part 50, there will be NRC findings and a pre-operational hearing opportunity to resolve any contested issues related to conformance of the as-built



plant with design requirements, as has always been the case in Part 50 licensing proceedings. Thus under Part 50, ITAAC are not needed to ensure that the facility is built in accordance with the certified design and the Commission's regulations.

**B. ITAAC Are Uniquely Applicable to COLs Under Part 52**

The concept of ITAAC was first created by the NRC in promulgating Part 52. Specifically, 10 CFR 52.47 requires a design certification application to include ITAAC applicable to the certified design; 10 CFR 52.79 requires an application for a combined license (COL) to include ITAAC (including the design certification ITAAC if the COL application references a design certification); and 10 CFR 52.97 requires that the COL itself include these ITAAC. As stated in Sections 52.79 and 52.97, the purpose of ITAAC is to provide reasonable assurance that a plant with a COL is built and will be operated in conformance with the NRC's applicable requirements. In contrast, Part 50 does not refer to the concept of ITAAC, and there is no provision in either Part 50 or Part 52 for applying ITAAC to plants licensed under Part 50.

The concept of ITAAC was developed for the sole purpose of facilitating the change from the Part 50 licensing process to the fundamentally different Part 52 licensing process where all safety issues -- except conformance of the constructed plant with the terms of the license -- are resolved before the license is issued and construction begins. Specifically, the Commission determined that it was possible for the NRC to resolve all licensing issues identified in Section 185 of the Atomic Energy Act during review of an application for a COL, except for the provision in Section 185 which requires the NRC to find that the plant has been constructed and will operate in accordance with applicable regulatory requirements. The Commission established the concept of ITAAC to correspond with this provision in Section 185 of the Act. (See 54 Fed. Reg. 15372, 15380 (1989).) In particular:



- ° Under 10 CFR 52.47(a)(1), 52.79(c) and 52.97(b)(1), the COL must contain ITAAC that are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's regulations.
- ° Under 10 CFR 52.103(g), the Commission must find that the ITAAC acceptance criteria in the COL are met prior to operation of the facility.

Thus, the purpose of ITAAC is to enable the Commission to make a finding that is a Part 52 prerequisite for initial operation of a plant. Part 52 does not identify any other uses or purposes of ITAAC.

**C. ITAAC Should Not Be Applied To Part 50 Licensees Because Part 50 Provides Another Means For Accomplishing the Purpose of ITAAC**

The NOPR proposes that ITAAC be made applicable to a Part 50 construction permit. (See NOPR Sections III.I and III.D.) Under Part 50, however, there is no need for requiring adherence to ITAAC because the purpose of ITAAC is accomplished through other, traditional and well-understood means. In particular, under Part 50, the NRC must explicitly find prior to issuance of an operating license that the plant has been constructed and will operate in conformance with applicable regulatory requirements. (See 10 CFR 50.57(a)(1) and (2).) For Part 50 plants that will reference the design certification rule, the NRC should make this finding in the same manner as the NRC has always made its finding under § 50.57, except that design-related issues resolved during design certification should, as discussed earlier, have finality as provided in § 52.63. Thus, at the operating license stage, the NRC would have to make a finding regarding conformance of construction activities with applicable requirements, including the requirements (exclusive of ITAAC) in the DCD. Furthermore, interested members of the public will have an opportunity to litigate this finding in hearings on issuance of the operating license. As a result, ITAAC are unnecessary for Part 50 plants.

Furthermore, it is not necessary to apply ITAAC to Part 50 plants in order to ensure that Part 50 plants are subject to the design provisions and acceptance criteria in the ITAAC. The ITAAC are derived from the Tier 1 Design Descriptions, which themselves constitute a portion of the DCD requirements for applicants and licensees under Part 50 referencing a design certification. In some cases, the ITAAC acceptance criteria have values that are not stated in the Tier 1 Design Descriptions; however, those values are specified in Tier 2, which also constitutes requirements in the DCD. Therefore, the ITAAC contain no design provisions or acceptance criteria that are not contained in other portions of the DCD, and the ITAAC are not necessary in order to provide sufficient controls on the designs of Part 50 plants that reference a design certification.

This concept is demonstrated by two further points. First, the Commission's SRM dated February 15, 1991, stated that ITAAC should not impose additional design requirements. Second, the Final Design Approval (FDA) for the ABWR standard design does not incorporate the ITAAC. Since a Part 50 plant may reference a FDA, it is apparent that ITAAC are not essential for Part 50 plants. (In contrast, a combined license that references an FDA must have ITAAC.)

In the NOPRs, NRC has expressed concern that some of its safety determinations were so inextricably tied up in formulation of ITAAC that removal of the ITAAC requirements from the DCD for purposes of Part 50 licensing could compromise its safety determinations. (See NOFR Section III.D.) However, the only specific instance cited by NRC where this might be a concern is for the "Design Acceptance Criteria" (DAC), where detailed design information was not developed for design certification due to evolving technology or the inability to specify as-built information. In particular, Section III.D of the NOPRs states,

NRC staff relied on DAC for its evaluation of selected design areas where the applicant for design certification did not provide complete design information. Also, the Tier 2 information contains explanations and procedures on how to implement ITAAC.<sup>6</sup> Therefore, the Commission proposes that an applicant could not reference this design certification rule without meeting ITAAC, even though it is not a requirement in 10 CFR Part 50.

We believe that the NRC staff's concerns in the DAC area are unwarranted. First, each DAC has a corresponding Tier 1 Design Description, as well as an ITAAC. Tier 2 contains more detailed information related to each of the DAC areas. Although we believe that the ITAAC portion of each DAC should not be applicable to a Part 50 construction permit that references the rule, the Tier 1 Design Descriptions and associated Tier 2 provisions for the DAC will have finality and will constitute requirements for Part 50 construction permits, absent a change made in accordance with the change processes specified in the rule. Compliance with these requirements is enforceable by the NRC. Furthermore, noncompliance with these requirements would be a relevant factor in making the finding required by § 50.57 in deciding whether to issue an operating license, and in any operating license hearing on this issue.

There are other practical reasons why Part 50 applicants and licensees should not be subject to ITAAC. If ITAAC were applied to Part 50 applicants and licensees, the Part 50 process would be indistinguishable from the Part 52 COL process with respect to the standardized portion of the plant. As a result, there would be no reason for a Part 50 applicant ever to reference a design certification rule, which is inconsistent with the apparent intent of the Commission in allowing Part 50 applicants and licensees to do so. Furthermore, the ITAAC process is untried and

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<sup>6</sup> This sentence in the NOPR is not a valid reason for making ITAAC applicable to Part 50 plants that reference a design certification; in fact, it supports our position that ITAAC should not be applicable. Because Tier 2 provisions will be applicable to the holder of a construction permit who references a design certification, there is no necessity to apply the corresponding ITAAC provisions to a construction permit.

unproven, and in practice may prove to be more complex and burdensome than expected. In such an event, it would be prudent and beneficial for both the industry and the NRC to be able to take meaningful advantage of the design certifications under Part 50 without being compelled to utilize the ITAAC.

D. Evaluation of the NOPR Proposal Against the Goals of Design Certification and Part 52

The NOPR proposal to apply ITAAC to Part 50 construction permits does not promote the goals of Part 52, as discussed in the Introduction and Overview section of Attachment A. Specifically:

- Early Resolution of Safety Issues - The NOPR proposal is not necessary to achievement of this goal. The design commitments and acceptance criteria in the ITAAC are also contained in provisions in the Tier 1 design descriptions or in Tier 2, and these provisions constitute the early resolution of design issues in the areas subject to the ITAAC. Furthermore, since the ITAAC are used to resolve the one issue that cannot be resolved prior to construction (whether the as-built plant conforms with the terms of the license) ITAAC are not pertinent to the early resolution of safety issues.
- Standardization - The NOPR proposal is not necessary to achieve this goal. The design commitments and acceptance criteria in the ITAAC are also contained in provisions in the Tier 1 design descriptions or in Tier 2, and these provisions, along with the associated change controls, will ensure standardization in the areas subject to the ITAAC.
- Enhanced Protection of Public Health and Safety - The NOPR proposal does not relate to enhancement of protection of public health and safety. The Tier 1 design descriptions and Tier 2 provisions are requirements that must



be satisfied, regardless of whether ITAAC are applied to Part 50 construction permits.

- More Stable and Predictable Licensing Process - The industry expects that the ITAAC process will be a substantial improvement over the current construction review and hearing process for Part 50 plants. If the industry's expectation is realized, the ITAAC will provide a more stable and predictable licensing process. However, the ITAAC verification process is untested in licensing practice and it is possible that it may prove to be more complex and burdensome than expected. In such an event, it would be prudent and beneficial for both the industry and the NRC to be able to take meaningful advantage of the design certifications under Part 50 without being compelled to utilize the ITAAC.

In summary, the NOPR proposal does not promote the goals of design certification and Part 52. Furthermore, it would inappropriately and unnecessarily burden and complicate the Part 50 licensing process which needs no mechanism other than the operating license proceeding for the consideration of construction conformance issues.

#### E. Conclusion

The Commission should continue to allow the use of the design certification rule by Part 50 applicants and licensees, as originally envisioned in formulating Part 52. In doing so, the rule should state that all of the provisions in the rule and DCD are applicable to Part 50 applicants and licensees who reference the rule, except for those provisions related to ITAAC. The ITAAC may be referred to for guidance by Part 50 applicants, licensees, and the NRC staff seeking to apply the requirements of the DCD, but they should not serve as independent prerequisites in Part 50 licensing proceedings. Table 11 suggests language for the design certification rule to accomplish this objective.



TABLE 12

SUGGESTED REVISIONS TO SECTION 4(b) OF THE  
DESIGN CERTIFICATION RULES TO ALLOW PART 50  
APPLICANTS/LICENSEES TO REFERENCE  
THE DESIGN CERTIFICATION RULE WITHOUT APPLYING ITAAC<sup>7</sup>

§ 4 (b) An applicant for a construction permit, operating license, or combined license that references this design certification shall reference both Tier 1 and Tier 2 of the U.S. ABWR DCD. However, the ITAAC in Tier 1 are not applicable to an applicant for or holder of a construction permit or operating license.

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<sup>7</sup> This suggested language applies to the ABWR. Similar language is appropriate for the System 80+.

## **XI. Important Clarifications**

There are a number of other provisions in the proposed rules that are misleading, ambiguous or incomplete and should be clarified. Specifically:

### **A. The NOPRs Contain Potentially Misleading Statements Regarding the Status of References in the DCD**

#### **1. Introduction**

The NOPR states that "an applicant for a construction permit or COL, or licensee that references this certified design, must conform with all of the requirements from the DCD, including the codes, standards, and other guidance documents that are referenced from the DCD" (so-called secondary references). The NOPR goes on to state that "[t]he industry agreed to treat these secondary references as requirements even though they are not incorporated by reference in the context as described in the DCD." (See NOPR, Section III.D.) We believe that these statements in the NOPR should be clarified to more accurately reflect the status of the secondary references in the DCD.

#### **2. Discussion**

The design certification applicants cited secondary references for a number of purposes. Some of the secondary references were cited to impose requirements. However, when considered in context, it is clear that other secondary references in the DCD were not intended to be requirements. For example, some references contain information regarding historical events discussed in the DCD (e.g., references to the Browns Ferry fire and TMI-2 accident). Other secondary references merely contain source information (but not requirements) related to matters discussed in the DCD (e.g., NRC Information Notices). In other cases, references are made to documents or information for the purpose of explaining why the information is not applicable to the standard design (e.g., the ABWR DCD explains that some NRC Bulletins and Generic Letters are not applicable to BWRs).

Thus, it is clear that not all secondary references contain, or are intended to contain, requirements applicable to the standard design. From our discussions with the NRC staff, we understand that the staff agrees that not all secondary references in the DCD are intended to identify requirements, and that the context of a secondary reference indicates whether it contains a requirement.

Unfortunately, the language in the NOPR on this issue is imprecise, and the language could be misconstrued in the future as implying that all secondary references contain requirements. Therefore, we request the Commission to clarify this language. In this regard, we recommend that the following language be included in the Statement of Considerations:

Not all secondary references contain requirements applicable to an applicant or licensee who references this design certification. The context of the secondary reference within the DCD indicates whether the secondary references is intended to contain a requirement.

Finally, as stated in our Section I comments regarding the finality provisions in the NOPRs, secondary references that are deemed to contain requirements should be given finality. It would be incongruous to make a secondary reference a requirement and not give it finality.

### 3. Conclusion

The Commission should revise the Statement of Considerations to state that not all secondary references are requirements, and that the context of a secondary reference indicates whether the secondary reference contains a requirement.

**B. The NOPRs Contain Misleading Statements Regarding PRA Information Required For Submittal with COL Applications**

**1. Introduction and Discussion**

The industry supports the concept of future generic rulemaking to establish the regulatory basis for requiring the use and maintenance of a PRA in the operation of a standard plant. However, the following statement from Section III.D of the NOPR may be misinterpreted with respect to requirements on a license applicant for submittal of PRA information

The NRC's position is also predicated upon NEI's acceptance, in conceptual form, of a future generic rulemaking that requires a COL applicant or licensee to have a plant-specific PRA that updates and supersedes the design-specific PRA and maintain it throughout the operational life of the plant.

At our public meeting with NRC senior management on April 25, 1994, it was substantially agreed that a COL applicant referencing a design certification will review and, if necessary, update the design PRA to ensure that it bounds the site specific design (e.g., the ultimate heat sink) and that interface requirements of the standard design are satisfied. In addition, site characteristics such as river flooding, wind loadings, etc., will be compared to those assumed in the design PRA to ensure it is bounding. Consistent with the July 23, 1993, Commission SRM on SECY-93-087, the COL applicant will perform site specific PRA evaluations to address any site-specific characteristic not enveloped by the design PRA. These evaluations would be submitted as part of a COL application.

Consistent with the approach taken for design certification, significant insights stemming from the site-specific design information added to the PRA will be incorporated into the Final Safety Analysis Report (FSAR) to supplement those contained in Chapter 19 of the DCD. The plant-specific PRA itself will not be part of the FSAR. However, it would be separately provided to the NRC on the docket in

a consistent time frame. This agreement and the noted Commission guidance are reflected in the following discussion from SECY-94-182, "Probabilistic Risk Assessment Beyond Design Certification:"

In the COL application phase, the staff believes that the applicant should be required to (1) update design certification PRA or (2) complement it with any supplemental PRA analyses, as needed, to support its application in demonstrating the following:

- (1) site-specific data and features are bounded by site parameters specified in the design certification or, if not, a site-specific external events PRA analysis is performed to update the design certification PRA
- (2) detailed design of interfaces specified in the design certification are evaluated and shown to be consistent with the design certification PRA insights and assumptions

## 2. Conclusion

We recommend that the Commission ensure that the Statements of Consideration for the final design certification rules reflect the characterizations above. The final rules should not contain a statement (like that in Section III.D of the NOPRs) that would require "applicants and licensees to have a plant-specific PRA that updates and supersedes the design-specific PRA."



C. Other Clarifications

1. Section 8(c) allows an applicant or licensee to request an exemption from the design certification rule, but does not identify any provision for making generic changes in the rule. Section 8(c) should be augmented to specify a process for making changes in the rule itself (i.e., through rulemaking under Subpart H of 10 CFR Part 2).
2. The language in Section 8(c) regarding exemptions from the design certification rule is confusing and should be reworded to more clearly identify the criteria to be applied to exemptions from the language of the rule.

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# **Position Paper on Standardization**

Excerpt from

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THE U.S. NUCLEAR ENERGY INDUSTRY'S

**Strategic  
Plan  
for Building  
New Nuclear  
Power Plants**

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FOURTH ANNUAL UPDATE

NOVEMBER 1984

# **POSITION PAPER ON STANDARDIZATION**

**NUCLEAR POWER  
OVERSIGHT COMMITTEE**

April 1991

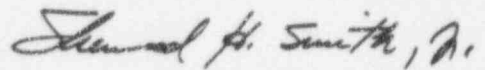
## MESSAGE FROM THE CHAIRMAN

There is a strong conviction within the industry, DOE, NRC, the Congress, and the public that future nuclear power plants should be standardized. The NPOC Strategic Plan\* clearly articulates that "The industry's fundamental objective in these processes is to achieve standardization." This position paper is intended to provide guidance to implement such standardization within families of plants.

Standardization is being pursued from complementary fronts: from the NRC and from the industry. The NRC, through its 10 CFR Part 52 certification, is promoting standardization of the safety-related aspects of nuclear power plants. This certification process allows full and meaningful public participation early in the program. The industry, by its efforts to standardize to the full extent of the guidance provided in this position paper, will also benefit the public through more cost-effective electricity rates.

It is recognized that the industry faces challenges in making this commitment to a high degree of standardization. It is much more difficult to achieve standardization in the United States with its large and diverse industry than in other countries with a monolithic nuclear industry. This standardization position paper is intended to serve as a reference for the work set forth in the NPOC Strategic Plan and as a model to guide the industry in implementing families of standardized plants.

At the same time, we all understand that the owners of a family of plants will make the ultimate decisions and that each company will determine how it participates in such a standardized family approach. Nevertheless, NPOC strongly encourages that you support the guidance provided in this position paper as we move forward.



Sherwood H. Smith, Jr.

Chairman  
Nuclear Power Oversight Committee  
and  
Chairman, President & Chief Executive Officer  
Carolina Power & Light Company

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\* "Strategic Plan for Building New Nuclear Power Plants," prepared by the Nuclear Power Oversight Committee, November 1990.

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## SECTION 1

### STANDARDIZATION POLICY STATEMENT

#### INTRODUCTION

The "NPOC Strategic Plan for Building New Nuclear Plants"\* creates a framework within which new standardized nuclear plants may be built. The Strategic Plan is an expression of the nuclear energy industry's serious intent to create the necessary conditions for new plant construction and operation. The industry has assembled a comprehensive, integrated list of actions that must be taken before new plants will be built and assigns responsibility for managing the various issues and sets timetables and milestones against which we must measure progress.

One of the key elements of the Strategic Plan is a comprehensive industry commitment to standardization: through design certification, combined license, first-of-a-kind engineering, construction, operation and maintenance of nuclear power plants. For many years, the U.S. nuclear power industry has recognized the significant economic advantages which would have accrued if it had been possible to build nuclear power plants to standard designs. The most obvious example of the success of standardization can be found in France. We have achieved standardization on a smaller scale in the United States, such as in the SNUPPS, Byron-Braidwood and Palo Verde projects, and recognize the clear advantages of its large-scale implementation in the future.

The NPOC plan proposes four stages of standardization in advanced light water reactors (ALWRs). The first stage is established by the ALWR Utility Requirements Document which specifies owner/operator requirements at a functional level covering all elements of plant design and construction, and many aspects of operations and maintenance. This document provides a major step towards standardization, because it represents a consensus of future customers on design features for ALWRs of both the large-size evolutionary type and the medium-size passive type. Through submission of the document to NRC for review and approval, it is expected that agreement will be reached with the industry on the resolution of generic safety issues that will provide a basis for NRC design certification. The document also describes the owner/operator requirements in design features such as layout, availability goals, instrumentation and control capability, human factors, balance-of-plant design, radiation control and capital and operating costs.

The second stage of standardization is that achieved in the NRC design certification. This certification level includes requirements, design criteria and bases, functional descriptions and performance requirements for systems to assure plant safety. The

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\* "Strategic Plan for Building New Nuclear Power Plants," prepared by the Nuclear Power Oversight Committee, November 1990.

level of detail will vary based on the safety significance of the component or system and includes the design information necessary for the NRC to make its final safety determinations.

The third stage of standardization, commercial standardization, carries the design to a level of completion beyond that required for design certification to enable the industry to achieve potential increases in efficiency and economy. As such, it addresses design decisions beyond the regulations and provides for the design standardization achieved outside of the regulatory scope. Industry commitment to achieve those economic benefits in combination with modern design and construction techniques will permit an economically optimum attainment of commercial standardization.

The final stage of standardization is enhanced standardization beyond design. A standardized approach is being developed in construction practices, operating, maintenance training, and procurement practices. This area creates the ground rules and organizational entities that would maintain standardization throughout the life of the plant. Commitment to such ground rules and organizational entities will ensure that the optimum economical and technical benefits of standardization will be achieved and then maintained during the plant operating life.

This comprehensive standardization program enables the NRC to proceed with design certification with the confidence that standardization beyond the regulations will be achieved. This confidence should answer the question of design detail required for design certification, and demonstrate that the NRC should require no further regulatory review beyond that required by 10 CFR Part 52. The cooperative efforts of NRC and industry to achieve standardization in their respective spheres of responsibility will achieve dramatic savings in time and capital, and permit new nuclear plant operation in time to meet the urgent demands for increased baseload capacity by the year 2000.

### POLICY STATEMENT

Based on these principles of standardization cited in the NPOC plan, the Ad Hoc Committee for the NPOC Strategic Plan agreed to develop a comprehensive policy statement for standardization. The following policy statement outlines the overall industry commitment to standardization:

Nuclear power plant standardization is a life-cycle commitment to the uniformity in the design, construction and operation of a family of nuclear power plants. Rigorous implementation of standardization is expected to achieve the efficiency and economy typically associated with increases in scale or breakthroughs in technology.

## BENEFITS

The benefits of standardization in this context include the following:

1. Early definition of requirements to ensure regulatory stability and eliminate unnecessary changes.
2. Timely, systematic and thorough resolution of design, construction, operation and related regulatory problems.
3. Optimization of design to improve constructibility, reliability, operability, and maintainability.
4. More simple and uniform designs that are easier to construct and operate leading to more efficient and effective regulatory oversight and enhanced public confidence.
5. Focused and efficient application of technical and financial resources.
6. An expanded resource base that enhances support capabilities for design, manufacturing, construction, installation, inspection, testing, operation, maintenance and replacement parts.
7. Maximized learning from past experience and accelerated experience feedback.

All of the above benefits should make new nuclear power plants viable, cost-competitive sources of electricity as well as contribute to safety.

## UNDERLYING PRINCIPLES

The following principles will be applied for each family of standardized plants:

- Standardization will be maintained throughout the construction and operating life of the family of standardized plants. An owner/operator structure will be established with clear mechanisms for maintaining standardization including a formal process for the review of proposed deviations.
- Standardization within systems, structures and components needed for safety will be subject to regulatory acceptance. Standardization within systems required for reliable power generation will be maintained by all the owner/operators of a family of standardized plants or by the organizational entity established and charged with that responsibility by all the owner/operators of that family.
- The plant design will be transferable, without alteration, to any site within the design envelope for the family of plants.

- Layouts of major systems and components will be identical. Plant layout should preclude the use of any shared equipment between units.
- System functional requirements will be identical, with siting consideration as the only acceptable reason for differences.
- Major structural, mechanical, electrical, or I&C components (including installed spares) essential to nuclear safety or reliable power generation will be identical.
- Functional, physical, and interface requirements for bulk commodities and for other components will be identical. The specifications should identify critical design characteristics to allow selection of the component that best meets the requirements and allow qualified substitutions without modifying essential identical components.
- Each plant within a family will be built to construction drawings and specifications that are identical to the extent noted above. It is recognized that drawing differences will arise due to site-specific requirements and variations within acceptable construction tolerances.
- Permanent modifications to systems, structures, or components essential to nuclear safety or reliable power generation will be made only after review and approval of the organizational entity established and charged with that responsibility by all the owner/operators of a family of standardized plants. Such review and approval by the family of plants may be deferred in the case of an emergency modification. However, modifications to replace failed or obsolete components should maintain standardization or, if necessary, be planned so as to recover standardization as the same components are replaced in the other plants within the family.
- Based on the principles cited above, standardization beyond hardware design will be implemented in such areas as training, maintenance and operating procedures, quality assurance, licensing, spare parts management and outage management.

#### FULL UTILITY PARTICIPATION--THE KEY TO SUCCESS

The benefits of standardization can be maximized by early and broad utility involvement and a life-cycle commitment. The fact that broad utility industry participation will be required throughout the process will help assure strong industry commitment to the detailed design choices that are necessary to achieve standardization. The commitment to standardization, once made, will not be compromised.



Although standardization reduces an individual utility's flexibility, that concern is diminished by the high degree of "buy-in" achieved during the design process. Nevertheless, NPOC believes that the overall benefits of standardization far outweigh the potential disadvantages.

#### SUPPORTING INFORMATION

The following sections expand on the four stages of standardization: Standardization of Utility Requirements (Section 2), Standardization of Design Certification and Standardized Licensing (Section 3), Commercial Standardization (Section 4), and Standardization Beyond Design (Section 5). Each section provides a concise definition, underlying principles and benefits for each phase.



## SECTION 2

### STANDARDIZATION OF UTILITY REQUIREMENTS

#### DEFINITION

A fundamental step in achieving standardization is the definition of owner/operator requirements, Building Block #3 of the NPOC Strategic Plan. Since it is a commonly agreed goal that nuclear power plant design should provide for effective operation and maintenance, the designers' experience must be augmented by the plant operators' extensive field experience if that goal is to be achieved. For this reason, the industry, through EPRI, has developed a three-volume Utility Requirements Document which specifies owner/operator design requirements for future advanced light water reactors (ALWRs) based on the more than 1400 reactor years of light water experience in the United States and 4,000 reactor years worldwide.

The three volumes specify Policy and Top-Tier Requirements, Evolutionary Plant Requirements, and Passive Plant Requirements. The document addresses the entire plant design, including power generation systems, reactor coolant system and reactor nonsafety auxiliary systems, reactor systems, engineered safety systems, building design and arrangement, fueling and refueling, plant cooling water systems, site support systems, man-machine interface systems, electric power systems, radioactive waste processing systems, and turbine generator systems. The Utility Requirements Document provides the technical foundation to achieve utility-customer driven standardization, which has never been available before in the United States.

#### UNDERLYING PRINCIPLES

The utility requirements are intended to produce a safe, reliable and economical plant, through reliance on fundamentally sound design principles including:

- Simplicity of design,
- Specification of substantial design margins,
- Utilization of proven technology, and
- Strong emphasis on human factors and man-machine interface.

Some examples of the design features which result from these principles are:

- Safety and Investment protection beyond regulatory requirements through increased thermal margin ( $\geq 15\%$ ), greater prevention of a degraded core

condition ( $\leq 10^{-5}$  per reactor year), and increased measures to mitigate against a severe accident ( $\leq 10^{-6}$  per reactor year of significant radiation release to the environment), and other requirements.

- Lifetime reliability by requiring 87% average plant availability over a 60-year design life achieved through many specific requirements bearing on materials selection, component reliability, and layouts for maintenance.
- Operational simplicity by requiring a forgiving plant response for operators and applying human factors throughout the design.
- Economics by requiring simpler designs and layouts, modularization, and a high percentage (90%) of completion of design documentation before start of construction of the first plant.

## BENEFITS

The following benefits will result from adherence to the utility requirements.

Sound Basis for Standardization. Since the utility requirements are developed from the broad experience base of proven technologies, enforce the principle of simplification and improve engineering margin, invoke a comprehensive reactor safety philosophy, and cover the entire power generation block of the plants, they can be used as a basis for standardization with confidence that plants built to meet the Requirements Document will operate reliably, economically and safely. There should be little concern that major changes in systems or components will be required. Further, since they represent a broad consensus of U.S. and international utility executives behind the thousands of design choices selected, there should be little concern that major changes in systems or components would be requested by future owner/operators.

Additional Confidence for Regulatory Stability. All volumes of the Requirements Document have been submitted to the NRC for review and approval. The various plant design organizations are supporting review of these requirements with the NRC to help ensure an industry consensus. Safety issues within them are being discussed with the NRC to achieve industry/NRC agreement on the major regulatory questions prior to design and construction. This agreement and NRC approval of the Utility Requirements Document assure the industry that a plant designed to comply with the Requirements Document will be licensable and not likely to be subject to later changes through regulatory actions. Further, if at any time during construction or operation significant safety questions did arise, they could be resolved more consistently within the context of the already approved Requirements Document criteria embodied within the design certifications, thus preserving standardization within a family of plants.

Firm Basis for Life-Cycle Economics of Standardized Plants. Because the Requirements Document is based on extensive operating experience and meets the objectives of simplification and increased engineering margin, owners of the plants of a given family will be able to extend these concepts and take advantage of resulting standardized designs as the foundation for "standardization" beyond design. These include areas such as training, maintenance, operating procedures, quality assurance requirements, spare parts management and outage management, see Section 5. The financial as well as technical advantages of extending standardization into these areas would be significant.

Enhanced Operability and Maintainability. Because the Requirements Document is a self-consistent body of knowledge covering the entire power generation portion of the plant, it will serve as an initial basis to optimize operability and maintainability in a mutual way among owners of a family of plants throughout the lives of the plants.

## SECTION 3

### STANDARDIZATION THROUGH DESIGN CERTIFICATION AND LICENSING

#### DEFINITION

10 CFR Part 52 establishes a licensing process for standardized designs to be certified by the NRC which is addressed in Building Blocks #2 and #4 of the NPOC Strategic Plan. In Part 52, the Commission approved the following definition:

A standard design is a design that is sufficiently detailed and complete to support certification in accordance with Subpart B of 10 CFR Part 52, and which is usable for a multiple number of units or at a multiple number of sites without reopening or repeating the NRC licensing review.

This definition only applies to the NRC certification of standard designs. Site-specific and operational considerations are addressed by the NRC during the COL stage of plant licensing. The industry definition of standardization presented in Section 1 expands upon the NRC definition to encompass the facets of a nuclear power plant that affect its cost competitiveness as a source of electrical power.

#### UNDERLYING PRINCIPLES

- a. In certifying a design, the Commission will resolve all safety issues at the time of certification, whether or not raised in a public hearing. These issues will only be open for challenge in a subsequent proceeding if significant changes have been made to that portion of the design which was certified.
- b. The design certification process will standardize the functional and major physical features associated with the safety aspects of a nuclear power plant with a level of detail equivalent to a contemporary FSAR minus as-built, as-procured, and site-specific details.
- c. The submittal for certification will include standard technical specifications, a quality assurance plan (QAP), and a design-specific (with generic data) probabilistic risk assessment (PRA) along with the inspection, test, analysis, and acceptance criteria (ITAAC) that will be the basis of determining constructed facility conformance with the certified design.
- d. Stability in the design will be attained because of restrictions on change imposed by Part 52 on both the NRC and the industry once a design certification has been issued.

- e. The level of design detail submitted for certification is limited to that necessary for safety determinations. The economic success of standardization requires the avoidance of the time-consuming and costly regulatory review of engineering details outside of governing regulations.
- f. Design certification is typically the first step in a standardized licensing process leading to a combined license (COL), plant construction and authorization to operate. For completeness, the overall process is as follows:
  - i. Design Certification Process: This segment includes NRC review and public hearings focused on the standard plant design as described in the Standard Safety Analysis Report (FSAR minus as-built, as-procured information and site-unique details), the proposed ITAAC, the QAP, the standard technical specifications, the design-specific (with generic data) probabilistic risk assessment (PRA), and an environmental assessment for the standard design. The NRC issues a final design approval, accepts the ITAAC, and proceeds with rulemaking. All safety issues will be resolved at this stage except those, if any, related to site-specific features. The design would be the same for all plants licensed with the certified design, thus promoting standardization.
  - ii. Combined License (COL) Application and Issuance: A combined license application adds those site-specific design and remaining operational features required by Part 52 to a certified design. The COL also references an early site permit, if applicable, and addresses emergency planning, environmental and financial qualification issues. NRC review and public hearings would focus only on site-specific and operating issues. The referenced certified design would only be open to challenge during the COL stage if the applicant has requested an exemption or amendment to the certified design. Once the license has been issued, construction can commence.
  - iii. During plant construction, the licensee must demonstrate that all ITAAC have been met, proving facility conformance with the certified design. No deviations are allowed from the ITAAC without an amendment or exemption to the license. Also during the construction process, the NRC would be performing a phased inspection and acceptance process. This "sign-as-you-go" process is intended to provide ongoing NRC concurrence that all applicable ITAAC are being satisfactorily met.
  - iv. When construction is completed, the NRC will make a finding that the plant has been built in accordance with the certified design and the COL by assuring that all required inspections, tests and analyses have been performed and that the associated acceptance criteria have been met. The plant would then receive authorization to load fuel and proceed to power testing and commercial operation.



## BENEFITS

The benefits of standardization through the design certification stage are:

- a. All generic safety issues will be resolved before a COL application is filed and are not subject to contention during COL proceedings or thereafter.
- b. A design certified by the NRC will be available for review by prospective customers.
- c. There will be higher confidence in the quotations received in the bidding process from NSSS vendors, architect/engineers and constructors.
- d. Investor confidence will be improved so that reasonable plant financing can be attained for detailed plant design and construction.

The benefits of the standardized licensing process are:

- a. All safety issues for the standardized design will have been resolved prior to plant construction, such that these issues will not be subject to NRC review or hearing contentions after construction is completed and the plant is awaiting authorization to operate.
- b. Design change restrictions are placed on both the NRC and industry allowing plant construction to proceed on schedule and within budget.
- c. Inspection, test, analysis, and acceptance criteria are approved by NRC at the beginning of the construction process leading to investor and owner/operator confidence in a smooth approval to operate at the completion of construction.
- d. Enhanced public confidence in the program will result from an improved regulatory process and more effective oversight activities.

## SECTION 4

### COMMERCIAL STANDARDIZATION

#### DEFINITION

The third phase of standardization in the NPOC Strategic Plan, called commercial standardization, will help enable the industry to achieve the efficiency and economy of commercial nuclear power. Commercial standardization expands the level of design standardization achieved under design certification (Section 3), in that it addresses design decisions beyond regulatory requirements and provides design standardization outside the regulatory scope.

Commercial standardization is the nonrecurring engineering which can be performed generically and applied directly to all plants referencing the same design certification. Simply stated, commercial standardization begins with the level of design detail required for design certification and concludes with the level of design detail where site-specific and project-specific characteristics control. Since the level of detail required for design certification will vary based on the safety significance of the system, it follows that the starting point for commercial standardization will also vary by system. Commercial standardization includes all of the engineering needed to complete the nonrecurring engineering tasks for a family of plants. It will include procurement, construction, and installation specification details beyond those required for design certification, including function, fit, and form details for standardized equipment. Prior to beginning construction, some recurring engineering must be completed to account for site-specific and project-specific items. Site-specific differences are minimized by employing a "site-envelope" design approach that bounds most U.S. sites; therefore, site differences should not significantly reduce the degree of standardization.\*

Commercial standardization is an important element of "first-of-a-kind engineering" described in Block 6 of the Strategic Plan. The other key element of Block 6 is recurring engineering. The relationship between these two elements and their impact on standardization is discussed in Appendix A.

#### UNDERLYING PRINCIPLES

##### Approach

Standardization of the design will be achieved in a phased manner as the design develops and the commercial standardization engineering is completed. As commercial standardization engineering commences, industry commitment to

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\* For sites outside the design envelope, site-specific analyses and/or design changes must be accomplished.

standardization will be formalized by establishing the industry ground rules and organizational entities that will control and maintain, within legal constraints such as antitrust limitations, design and operational standardization beyond the requirements of Part 52. Commercial standardization will be achieved through the industry's commitment to achieve broad consensus for the design of the first plant of each certified design, and to duplicate that first plant's design details to the extent permitted by site and project differences, as well as lessons learned from construction and operation experience.

#### Envelope for Function, Fit and Form

Major equipment essential to safety or power generation will be identical (see Section 1). Physical characteristics of other equipment and bulk commodities will be investigated to determine an appropriate range of physical parameters, which will accommodate equipment from several suppliers but remain within the design certification requirements. These physical characteristics will be used to establish an envelope for use in designing the details of foundations, service connections, and supporting systems. The established envelope conditions will be included in the purchase specifications for all equipment on a function, fit, and form basis.

These envelopes will allow for sufficient variations in noncritical parameters to ensure that the design will be applicable for more than one supplier while meeting the function, fit and form requirements. Necessary flexibility to accommodate changes in equipment availability is maintained until a project commitment is made and equipment suppliers are put under contract. Continued flexibility will also be provided to accommodate obsolescence, availability, adverse operating experience, excessive pricing, and significantly improved technology. The allowable variation will be restricted sufficiently to ensure that all future plants will look and function as identical units. If the initial project commitment were to involve an option for a family of identical plants, options for identical equipment would also be obtained by the owner/operators.

#### Level of Design Detail in Commercial Standardization

Under commercial standardization, building designs will be essentially completed. Since commercial standardization engineering adds detail to the level of engineering established for certification, the detailed building arrangement will conform in all aspects to the certified design. Placement of major equipment, the routing of major piping, and other major services will be detailed in conformance with the elements of the certified design. Rebar requirements will be established for both the nuclear and turbine island buildings, consistent with the layouts and stress analyses of the design. This level of detail will apply equally to any site and will permit accurate estimates of all building commodities. Equipment purchase specifications will be prepared for all major equipment. Additional discussion is provided in Appendix A.

### Percent Design Completion

It is estimated that engineering performed under commercial standardization, when combined with design certification engineering will result in a range of 40 to 60% of the design drawings. At this point, the plant design will be taken to its practical limit for generic design standardization, and design details up to this limit will be fixed. This level of design document completion corresponds to approximately 80% design completion. The addition of site-specific engineering will produce a 90% completion of plant design, the ALWR utility requirement prerequisite to placement of first concrete. Additional discussion is provided in Appendix A.

### Realization of Commercial Standardization

Commercial standardization engineering can proceed beyond the level of detail required for design certification, in parallel with design certification rulemaking. However, care must be taken not to complete this engineering too early, since engineering changes driven by design changes occurring early in the certification effort could result in major reengineering of the details and a significant increase in the overall cost of the plant. In the past, such iterative designing in parallel with the licensing effort has been a significant factor in making the engineering costs for nuclear power stations excessively high. In view of these considerations, some of the commercial standardization engineering effort should await a final design approval (FDA) of the design. Work related to major component design, balance of plant, and module construction/assembly can be undertaken prior to the issuance of the FDA.

## BENEFITS

### Economic Benefits

The benefits of commercial standardization are overwhelmingly financial. Experience, as well as recent cost analysis of ALWR designs and construction scenarios, clearly indicate the need to achieve a very high level of design standardization of future nuclear power in order to remain competitive with other baseload generation options. Since nuclear power is capital-intensive, reduction in design, licensing, and construction costs will significantly enhance nuclear power's cost competitiveness.

### Regulatory Stability

A comprehensive commercial standardization program also benefits the industry by demonstrating to the NRC and the investment community that the industry is committed to attaining the full economic and safety benefits of standardization beyond that embodied in Part 52. This commitment should answer the question of design detail required for design certification. This commitment, when combined



with the licensing process . . . art 52, will enhance cost-competitiveness and safety of certified designs.

### Investor Confidence

The commercial standardization process provides sufficient engineering detail to provide a good cost estimate for a standardized plant, a key requirement of the NPOC Strategic Plan. It is this segment of post-certification engineering that will provide the greatest financial risk reduction for the owner/operators. As plant design proceeds and the technical uncertainties are reduced, the incentives for using standardized detailed designs for future customers and sites will become even greater.

### Optimum Choices for Site-Specific Issues

In order to achieve the full benefits of standardization, the industry will control and minimize the number of design changes required to accommodate site-unique features or project-specific preferences. There are many considerations such as licensing, cost, and scheduling to be evaluated in determining to what extent site-unique differences affect standard plant design. The industry will implement practices that will optimize the scope of design that can be standardized, based on overall life-cycle economic considerations, and practical recognition of those features which must remain site-unique. The development of such industry practices is discussed in Section 5.



## SECTION 5

### STANDARDIZATION BEYOND DESIGN

#### DEFINITION

Standardization beyond design is intended to establish (1) the institutional framework to oversee life-cycle plant standardization, and (2) uniformity in appropriate elements of the organizational structure, administrative controls, and operating and maintenance practices that provide a clear benefit in terms of operational performance, reliability, efficiency, or economy of scale. This includes maintaining the standard design and design intent in all units of a family of plants over their lifetimes. The development of standardization beyond design is described in Building Block 7 of the Strategic Plan.

Many of the elements of this section will apply to the construction phase of the standardized plants to achieve benefits of standardization. Standard construction techniques are treated to some degree in the ALWR Utility Requirements Document (Section 2) and commercial standardization (Section 4). Organizational elements will be addressed by the industry as the construction process proceeds after commercial standardization is completed. The remainder of this section is focused on the operating phase.

#### UNDERLYING PRINCIPLES

- a. The ability to standardize practices related to operational performance, reliability, and efficiency is dependent upon a strict adherence to maintaining life-cycle standardization among all plants in a "family."
- b. Industry-developed source documents exist that relate to standardized nuclear power station operation. This situation is analogous to the way in which the ALWR Utility Requirements Document relates to standardized design. As such, existing INPO performance objectives and criteria, as well as other selected industry guidelines, provide an up-to-date, field-tested framework for development of standardized approaches.
- c. The processes or practices important to operational performance, plant configuration management, efficiency, and economy of scale are consistent among all plants in a family.
- d. Changes to standardized elements of organizational structure, administrative controls, and operating practices, or to the plant configuration that provide a clear benefit in terms of operational performance, efficiency, or reliability will be implemented uniformly at all plants in the family. Before implementation, permanent changes will be reviewed and approved through a process to be

established by the owners of a family of plants. Temporary changes made for good cause will be reviewed for permanency and applicability to the entire family as soon as practicable.

- e. Standardization beyond design will be implemented in such a way as to strengthen line management's ability to establish priorities and to direct plant activities on matters affecting safety, operational performance, reliability, and efficiency.
- f. Standardization beyond design will accelerate the learning process through the sharing of experiences and better identification of root causes of problems, particularly where nuclear safety is involved. Standardization will require careful scrutiny and control of proposed changes. This control must be exercised in such a manner that does not discourage beneficial changes that arise from the accelerated learning process.

### BENEFITS

Benefits are expected to accrue in the areas of operational performance, reliability, and efficiency because of the development and implementation of standardized policies and practices. The following are examples:

#### a. Management Practices

- i. Strengthened management direction will be achieved via uniform and clearly defined lines of responsibility and accountability for nuclear plant operation, maintenance, training, technical support, and other support activities.
- ii. Decision making will be enhanced through the combined expertise and experience of the entire family.
- iii. Enhanced management capability for monitoring and assessment, including early identification and correction of problems is expected, based on application of consistent policies, procedures, and work control processes.
- iv. Standardized performance measures generated at the family of plants will have a common basis for comparison. Emulation and mutual support to meet the performance measures will be the natural result of standardization.
- v. Longer-term projection and planning for major work and modifications will be facilitated by standardization.

- b. Uniform training will improve effectiveness and efficiency resulting in improved personnel knowledge, abilities, and performance, and lower costs for development and implementation. The following are examples:
  - i. Training programs, once developed, can be applied uniformly to all plants in the family.
  - ii. Plants within a family can share the cost and use of standardized control room simulators, mock-ups and laboratories without compromising the effectiveness of training. Also, other training facilities can be readily shared and/or duplicated.
- c. Sharing of operating experience from a broader, more uniform family of plants will accelerate learning and strengthen corrective actions.
- d. Plant support by vendors will also be strengthened by lifetime involvement in installation, testing, performance, and maintenance of plant components. Economies of scale in maintaining components can be achieved through shared inventories, standard technical documentation, contracts, and spare parts procurement.
- e. Standardized approach to outage management will facilitate safer, shorter and more effective outages due to practices such as the following:
  - i. Standard contracts with long-term vendors
  - ii. Standard design modification packages and installation procedures.
  - iii. Standard tasks and schedules.

## ELEMENTS

Standardization beyond design is intended to foster uniformity in operation, maintenance, training and quality assurance practices that provide a clear benefit in terms of operational performance, reliability, efficiency or economy of scale. To realize the full benefits of standardization beyond design, a set of essential elements consistent with the underlying principles described above will be defined. These elements will include areas such as:

### a. Organizational Structure

A standard baseline organizational model, that defines the plant line management positions, functions, responsibilities, and accountabilities down to the first-line supervisory position will be developed. This model will also identify organizational interfaces among a family of plants, between line management and individual or common support groups, and with other industry

organizations. The model will also define typical staffing levels and supervisor-to-worker ratios. The models will include provision for individual talents and strengths, local organized labor considerations, etc.

b. Administrative Procedures

Standardized administrative procedures will be developed to control essential activities. Examples include control room activities, conduct of maintenance, communication and the use of nomenclature/terminology, the control of plant work, and temporary modifications to plant equipment.

c. Technical Procedures

Certain technical procedures related to the operation, maintenance, testing, and monitoring of standardized plant systems and equipment will be identical. Procedures in this category include analytical procedures as well as operating and preventive and corrective maintenance procedures.

It is recognized that there may be a need for temporary changes; however, the goal is to minimize temporary changes and return changes to their standardized conditions as soon as possible unless it is beneficial to make these changes permanent for the family of plants.

d. Personnel Qualification

Personnel qualifications will be based on standardized educational, training, and experience requirements. Methods for selection and professional development of supervisors and managers will also be standardized. Standard position descriptions that support the organizational model will be developed.

e. Training

Training programs will be standardized. The method of implementing this training will be in accordance with standardized policies that define the conduct of classroom, simulator, laboratory, and on-the-job training.

f. Performance Standards

Uniform standards of performance will be developed to address activities that affect the design, construction, or operational performance of the plant. Examples of these activities include the conduct of operation and maintenance, procedure use and adherence, quality of work, material condition, and housekeeping.



g. Logistics Support

Logistical support will be established for standardized hardware within a family of plants. This support includes procurement and sharing of expertise, spare parts inventories, and other resources.

h. Operating Experience

Operating experience programs will be standardized. Methods of investigating, developing, disseminating, and implementing lessons learned from operating experience will be applied uniformly at all members of a family of plants.

i. Configuration Management

Configuration management programs for each family of plants will be standardized among the plant owners, with the assistance of the NSSS vendor and the architect/engineer (A/E). Any plant-specific or temporary deviations from the standard plant will be accounted for in the on-site configuration management program for each individual plant.

It is recognized that there may be a need for temporary changes; however, the goal is to minimize temporary changes and return changes to their standardized conditions as soon as possible unless it is beneficial to make these changes permanent for the family of plants.

j. Quality Assurance

Quality assurance/quality control programs and organizations will be identical and will be based on a common quality assurance plan. Quality functions will be integrated into line management to the maximum extent feasible.

k. Regulatory/Licensing Interface

Regulatory interface will be conducted jointly for those issues generic to a family of plants. To the maximum extent possible, the family of plants will act directly with the NRC on issues arising from regulatory activities as a family. However, each plant owner retains full responsibility for safe plant operation, and the NRC retains authority to interact with individual plants as prescribed by their licenses.



## MANAGEMENT AND IMPLEMENTATION

To achieve and perpetuate the level of standardization intended, a mechanism will be created by the owner/operators of a family of plants for coordination and control of activities. The individual plant owners, the NSSS vendors, and the A/Es involved must all be participants. Such a mechanism must be sufficient to attain the objectives of the above elements.

## APPENDIX A

### ELEMENTS OF ENGINEERING DETAIL

The elements of engineering detail for a standard ALWR's conformance to the Utility Requirements Document, design certification, commercial standardization, and recurring engineering phases are provided in this appendix.

#### Utility Requirements Document Conformance [Section 2]

The ALWR Utility Requirements Document provides specific guidance on fundamental utility principles which strongly influence design requirements. The key policies of the Utility Requirements Document, as embodied in Volume 1, are: simplification, design margin, human factors, safety, design basis versus safety margin, regulatory stabilization, standardization, proven technology, maintainability, constructibility, quality assurance, economics, sabotage protection and good neighbor. Conformance to these principles will provide a firm foundation for the ultimate design of the future ALWRs. Conformance to the detailed engineering requirements provided in Volumes II and III will establish the engineering approach for systems and functions within the scope of design certification. However, because the ALWR Requirements Document contains extensive utility requirements well beyond the regulatory scope, it will also form the basis for much of commercial standardization scope.

#### Design Certification Engineering [Section 3]

To achieve NRC certification, plant designs will be completed to the level of detail necessary to demonstrate conformance to applicable regulatory guidance. Additionally, information normally contained in certain procurement, construction, and installation specifications must be available for audit, if necessary, for NRC to make a safety determination. This level of design will provide all critical design specifications and criteria, plant general arrangements, major equipment location, P&IDs, one-line electrical drawings, pipe and cable tray routing and QA requirements, for those systems affecting plant safety. Definition will be provided for those inspections, tests, analyses and acceptance criteria (ITAAC) that are necessary to demonstrate that the nuclear power facility is built according to its licensing basis.

The engineering performed for design certification is being developed to be directly applicable to most U.S. site conditions including seismic and meteorological. This certified design will be available for use without change to all sites whose characteristics are within the design envelope. This level of detail required for design certification will contribute to a high degree of standardization, even before commercial standardization efforts begin. For example, fixing the general plant arrangements for both the nuclear island and turbine island will provide a major step in ensuring standardization. Specifying the other critical parameters will

further ensure a high degree of standardization throughout the entire plant at the design certification stage.

Design certification engineering complements commercial standardization in that it serves as the starting point for further industry standardization. NRC review of design information beyond the point necessary for it to make its final safety determination, for the sole purpose of encouraging standardization, is not appropriate, nor is it necessary given the comprehensive industry commercial standardization program to achieve standardization beyond the regulatory scope.

It is estimated that engineering performed for design certification will result in approximately 60% of plant design being completed. This includes all of the safety-related design.

#### Commercial Standardization Engineering [Section 4]

The following discussion summarizes the level of detail that will be achieved under commercial standardization, independent of equipment supplier or site conditions.

The routing of all major piping (with diameter of two inches or greater) within the buildings will be specified. Preliminary stress analysis will be performed and pipe supports and hangers will be located. Anchors and embedments will be located and specified. Isometric drawings will be prepared as necessary for the stress analysis. Anchor points will be specified at each equipment location to permit independent analysis of the short connecting piping which will be designed after selection of the equipment suppliers.

Cables will be sized on the basis of the equipment design specifications. Cable routing will be established, and cable trays located and sized in conformance with the certified design, including compliance with cable separation criteria. Instrument cables will be routed to major termination cabinets; however, terminations to specific pieces of equipment will await selection of equipment suppliers. Instrument types should be identified and areas reserved on building walls for attachment.

In support of the purchase specifications and the cost estimate, quality assurance requirements will be established for all equipment, commodities and for installation. These requirements will be in sufficient detail to define the requirements for the QA plans, surveillance programs, audits, record retention, equipment identification, document submittal, and disposition of deviations. Detailed construction schedules will be developed to show required sequencing, required deliveries for equipment and commodities, and required availability for site cranes and construction equipment. Detailed schedules will also be developed for all phases of engineering, plant turnover and startup of the standard plant.

## Recurring Engineering

The recurring engineering portion of plant design is controlled by site-specific and project-specific considerations. The final design details can proceed when a project is committed and equipment suppliers are selected for the first plant or family of plants. In this phase, the generic analyses will be fine-tuned to ensure that the detailed design with the selected equipment meets all of the design requirements. Detailed construction drawings will be completed. This stage will result in a fully documented design. This design could be applicable to one unit or a family of plants depending on utility alliances, timing of orders, and the selection of constructors and equipment suppliers.

After purchase of equipment for a particular plant, the piping analyses will be finalized to ensure that the detailed design meets all of the design requirements with the selected equipment. Additional analysis will be performed for the small connecting piping and the pipe supports will be engineered.

Building drawings will be finalized during this phase. Rebar details will be finalized. Building services will be incorporated and construction procedures developed. Equipment installation procedures and QA plans will be prepared incorporating vendor information. Final connections from the equipment to the process lines will be finalized. Designs will be generated for electrical terminations, cooling, water connections and other services.

Piping stress analyses will be completed, incorporating the short connecting pipe from the equipment to the main process line. Pipe spool drawings and fabrication isometrics will be prepared incorporating the routing and other requirements from the certified design. Anchor location and pipe support specifications will be verified. Connections to yard piping will be finalized as the site-unique engineering was carried out in parallel with the plant standard design.

The recurring engineering phase also includes completion of most site-specific design details. In commercial standardization engineering, trade-off decisions must be made to determine those features that will be standardized and those which will require redesign to accommodate site-unique conditions.

An example of a standard versus site-unique decision is related to the circulating water system and condenser design. Large site-unique differences exist in cooling water source temperatures. To accommodate an envelope of typical sites, one standardized design solution is to (1) size the condenser shell for the highest reference cooling water temperature, (2) keep the number of circulating water pumps constant, (3) vary the circulating water pump and piping size, and (4) reduce the number of tubes in the condenser to allow for lower cooling water temperatures. This solution allows the use of standard turbine building layouts and standard

pump operation modes with little impact on plant physical arrangements. This solution does not provide the lowest equipment cost for specific sites with lower cooling water temperatures, but could produce economic benefits considerably greater than those resulting from site-specific optimization.



August 4, 1995

**ATTACHMENT C**

**RESPONSE TO NRC's  
"SPECIFIC REQUESTS FOR COMMENTS"**

**on the**

**PROPOSED DESIGN CERTIFICATION RULES  
FOR THE ADVANCED BOILING WATER REACTOR  
AND THE  
SYSTEM 80+™ STANDARD PLANT DESIGNS**

This attachment provides responses to NRC's "Specific Request for Comments" contained in Section IV of the NOPRs. Each of NRC's specific requests is repeated below, together with the response.

### NRC REQUEST

1. Should the requirements of 10 CFR 52.63(c) be added to a new 10 CFR 52.79(e)?  
(Refer to discussion in NOPR Section III.A.)

### RESPONSE

As we understand it, the NRC Request proposes to make only an administrative change to Part 52 (i.e., to move or duplicate Section 52.63(c)) and not to change the substantive requirements in this Section. We have no objection to such an administrative change.

### NRC REQUEST

2. Are there other words or phrases that should be defined in Section 2 of the proposed rule? (Refer to discussion in NOPR Section III.B.)

### RESPONSE

We do not believe that it is necessary or desirable to define other terms in Section 2 of the design certification rules. However, as discussed in Sections VI, IX and X of Attachment B, expanded definitions for specific terms are recommended.

### NRC REQUEST

3. What change process should apply to design-related information developed by a COL applicant or holder that references this design certification rule? (Refer to discussion in NOPR Section III.D.)

## RESPONSE

The COL applicant will be required under 10 CFR 52.79 to submit a final safety analysis report (FSAR). Changes to the FSAR will be controlled by 10 CFR 50.54 and § 50.59, which are incorporated by reference in 10 CFR 52.83. The COL applicant or licensee must also consider impacts on Tier 1 and Tier 2. If the change is a change to Tier 1 or Tier 2, the change process in the design certification rules would apply. Performance of tests and experiments not described in the FSAR or DCD is covered by Section 50.59, which is applicable to COLs. Therefore, there is no need for the design certification rules to address such tests and experiments.

Design information developed by a COL applicant that adds further detail to or otherwise supplements Tier 1 and Tier 2 of the standard design (e.g., design specifications and detailed drawings) will be treated similarly to detailed design information developed by Part 50 applicants and licensees. For example, changes in safety-related design specifications and drawings will be subject to the controls in Criterion III of Appendix B to Part 50. Among other things, such controls will assure that the design change conforms with the DCD and the FSAR. However, such changes will not be subject to 10 CFR 50.59 and will not otherwise require prior NRC review or approval.

The NRC staff has asked in particular how the detailed designs developed in the areas subject to interface requirements, design acceptance criteria (DAC), and COL License Information Items in the DCD would be controlled.

- The detailed designs related to interface requirements will be contained in design specifications and drawings and described in the FSAR. Changes to the design specifications and drawings will be controlled in accordance with the applicable design control provisions of the quality assurance program. Changes to the FSAR will be controlled under Section 50.59. Additionally, changes to the FSAR will be evaluated for conformance with the applicable interface requirements in the DCD, and any changes to the interface requirements in the DCD will be controlled in accordance with the change processes specified in the design certification rule.

- The detailed designs related to the DAC will be contained in the design specifications and drawings. Additionally, to the extent necessary to comply with 10 CFR 50.34, these detailed designs will be described in the FSAR. Changes to the DAC-related design specifications and drawings will be controlled in accordance with the applicable design control provisions of the quality assurance program. Changes to the DAC-related provisions in the FSAR will be controlled under Section 50.59. Additionally, changes to the DAC-related provisions in the FSAR will be evaluated for conformance with the applicable DAC in the DCD, and any changes to the applicable DAC in the DCD will be controlled in accordance with the change processes specified in the design certification rule.
- The detailed designs related to the COL Information Items will be contained in design specifications and drawings and described in the FSAR. Changes to the design specifications and drawings will be controlled in accordance with the applicable design control provisions of the quality assurance program. Changes to the provisions in the FSAR will be controlled under Section 50.59. Changes to the applicable provisions in the FSAR will not need to be evaluated for conformance with the COL Information Items in the DCD, because as stated in the DCD Introduction, the COL Information Items in the DCD have no effect after issuance of a license.

#### NRC REQUEST

4. Are each of the applicable regulations set forth in Section 5(c) of the proposed rule justified? (Refer to discussion in NOPR Section III.D).

## RESPONSE

As discussed in Attachment B, Section II, none of the "applicable regulations" is justified because each of the "applicable regulations" is addressed in whole or part in Tier 1, as well as Tier 2, of the design certification rule, which itself will be a regulation applicable and enforceable for plants referencing it. Therefore, the "applicable regulations" are legally and technically unnecessary. Moreover, because the "applicable regulations" proposed by the NRC staff intentionally use "broadly stated" provisions that will be susceptible to new and diverse interpretations that could give rise to unwarranted backfits, the "applicable regulations" are destabilizing and, therefore, contrary to the purpose of Part 52.

Furthermore, some of the individual "applicable regulations" are not justified for other reasons. For example, as discussed in Attachment B, Section II (Table 3):

- The proposed "applicable regulations" on ISLOCA, equipment survivability, and fire protection are inconsistent with previous positions approved by the Commission.
- The proposed "applicable regulations" on shutdown risk, reliability assurance program, and inservice testing impose programmatic requirements on applicants and licensees that are independent of the standard design being certified. If the NRC desires to impose such requirements, it should do so through an amendment to Part 50, not through design certification.

Furthermore, as discussed in the comments submitted by General Electric, the NRC staff's proposed "applicable regulations" could be construed as being inconsistent with the ABWR standard design approved by the NRC. This situation is highly destabilizing.



## NRC REQUEST

5. Section 8(b)(5)(i) authorizes an applicant or licensee who references the design certification to depart from Tier 2 information without prior NRC approval if the applicant or licensee makes a determination that the change does not involve a change to Tier 1 or Tier 2\* information, as identified in the DCD, the technical specifications, or an unreviewed safety question as defined in Sections 8(b)(5)(ii) and (iii). Where Section 8(b)(5)(i) states that a change made pursuant to that paragraph will no longer be considered as a matter resolved in connection with the issuance or renewal of a design certification within the meaning of 10 CFR 52.63(a)(4), should this mean that the determination may be challenged as not demonstrating that the change may be made without prior NRC approval or that the change itself may be challenged as not complying with the Commission's requirements? (Refer to discussion in III.H.)

## RESPONSE

As discussed in Attachment B, Section I.C.2, changes made in accordance with 10 CFR 52.63(b) and the change processes specified in the design certification rule should be accorded finality. In particular, providing an opportunity for hearings on changes that do not involve an unreviewed safety question would be totally inconsistent with 10 CFR 50.59 and long-standing NRC practice. Therefore, the statement in Section 8(b)(5)(i) that "changes will no longer be considered 'matters resolved in connection with the issuance or renewal of a design certification' within the meaning of 10 CFR 52.63(a)(4)" should not be included in the final design certification rule.

The NRC staff clarified in a meeting on June 27, 1995, that the intent of the Section 8(b)(5)(i) is that § 50.59-like changes made prior to issuance of a COL could be challenged in the COL proceeding. After COL issuance, the staff stated that hearing opportunities were limited to issues of compliance with ITAAC. As discussed in Section I.C.2.a of Attachment B, we agree with the NRC staff's characterization that the hearing opportunity after COL issuance is limited to properly supported contentions of ITAAC noncompliance. However, even as

clarified by the NRC staff, we do not agree with the proposed Section 8(b)(5)(i) because it would effectively open to challenge in the COL proceeding all § 50.59-like changes made prior to issuance of a COL, regardless of their significance or relevance to the NRC's safety finding in the license. Consistent with current practice, an allegation that an applicant or licensee has not complied with § 50.59 is in the nature of a request for enforcement action which should be brought pursuant to 10 CFR 2.206, rather than in a request for a hearing. In the Part 52 context prior to COL issuance, the Commission would determine based on petitions made under § 2.206 whether the change was an appropriate subject for consideration in the COL proceeding. This approach is consistent with NRC staff's position that changes made prior to COL issuance should be subject to a hearing opportunity in the COL proceeding. Appropriately, the § 2.206 (or equivalent) process provides the public the same opportunity before COL issuance as after to raise questions regarding § 50.59-like changes and will ensure that only those changes deemed by the Commission to be significant to the NRC's safety finding in the license will be considered as part of the COL proceeding. (See Attachment B, Section I.C.2.a.)

## **NRC REQUEST**

6. How should the determinations made by an applicant or licensee that changes may be made under Section 8(b)(5)(i) without prior NRC approval be made available to the public in order for those determinations to be challenged or for the changes themselves to be challenged? (Refer to discussion in NOPR Section III.H.)

## **RESPONSE**

A mechanism already exists for informing the public of changes made pursuant to Section 8(b)(5)(i). Specifically, pursuant to 10 CFR 50.59(b) and Section 9(b) of the proposed design certification rules, an applicant or licensee must submit periodic reports to the NRC which summarize changes made under Section 8(b)(5)(i). Such reports will be placed in the NRC's Public Document Room and therefore will be available for review by the public.

## NRC REQUEST

7. What is the preferred regulatory process (including opportunities for public participation) for NRC review of proposed changes to Tier 2\* information and the commenter's basis for recommending a particular process? (Refer to discussion in NOPR Section III.H.)

## RESPONSE

Changes to Tier 2\* information should be treated similarly to the changes which require prior NRC approval under § 50.54(a), (p) and (q). Specifically, prior NRC approval should be in the form of a letter to the applicant or licensee. The change should be subject to an opportunity for public hearing only as provided in 10 CFR 52.63(b)(2); i.e., an opportunity for public hearing would be provided only for those Tier 2\* changes that also involve either a change in Tier 1, a change in the technical specifications in the license, or an unreviewed safety question.

Like other Tier 2 changes, the NRC will receive and place in the Public Document Room reports of Tier 2\* changes that include a brief description of the change and associated safety evaluation. Additionally, for Tier 2\* changes, the report submitted to the NRC will include a request (also on the docket and in the Public Document Room) for NRC staff approval for the change. Thus, the public will have access to information relevant to Tier 2\* changes and may participate if desired via the process provided by 10 CFR 2.206.

## NRC REQUEST

8. Should determinations of whether proposed changes to severe accident issues constitute an unreviewed safety question use different criteria than for other safety issues resolved in the design certification review and if so, what should those criteria be? (Refer to discussion in NOPR Section III.H.)

## RESPONSE

As discussed in Attachment B, Section IV, proposed changes to the severe accident and probabilistic evaluations in Chapter 19 of Tier 2 should be controlled as follows:

- (1) With respect to changes to or affecting the severe accident and probabilistic evaluations in Chapter 19, safety evaluations should be performed only for those changes to the important features identified in Section 19.8 of the ABWR DCD or Section 19.15 of the System 80+ DCD. Such safety evaluations will be sufficient to accomplish the Commission's goal of preserving the "severe accident insights", as stated in the Commission's Staff Requirements Memorandum dated February 15, 1991. It is unnecessary and would be unduly burdensome to perform safety evaluations for other changes in Chapter 19, since by definition such changes would not involve an important feature.
- (2) In performing safety evaluations of changes in severe accident and probabilistic evaluations, the definition of unreviewed safety question in 10 CFR 50.59 should not be used because this definition is only applicable to design basis accidents, not severe accidents. Instead, for severe accidents, the definition of unreviewed safety question approved by the NRC staff for Section 3.8 of the DCD Introduction for the ABWR should be used (i.e., an unreviewed safety question should be defined as a "substantial increase" in probability or consequences of a severe accident). Such a definition is necessary to preclude situations in which trivial changes in probability (e.g., an increase from  $10 \text{ E-}10$  to  $10 \text{ E-}9$  per year) are classified as unreviewed safety

questions requiring prior NRC approval and an opportunity for hearing. In this regard it should be emphasized that the proposed definition in Section 8(b)(5)(iii) is unduly narrow and inadequate in that it pertains only to the severe accident evaluations in Section 19E for the ABWR and Section 19.11 for the System 80+ (including associated appendices). The Commission should reject the proposal and instead should apply the "substantial increase" standard to the sections in Chapter 19 subject to the § 50.59-like process, i.e., Section 19.8 for the ABWR and Section 19.15 for System 80+ (as recommended above).

As has been discussed with the NRC staff in the context of longer term activities related to Part 52 implementation, the industry intends to develop guidance for endorsement by NRC to implement the provisions in Section 8(b)(5).

#### NRC REQUEST

9(a)(1) Should construction permit applicants under 10 CFR Part 50 be allowed to reference design certification rules to satisfy the relevant requirements of 10 CFR Part 50?

(2) What, if any, issue preclusion exists in a subsequent operating license stage and NRC enforcement, after the Commission authorizes a construction permit applicant to reference a design certification rule?

(3) Should construction permit applicants referencing a design certification rule be either permitted or required to reference the ITAAC? If so, what are the legal consequences, in terms of the scope of NRC review and approval and the scope of admissible contentions, at the subsequent operating license proceeding?

(4) What would distinguish the "old" 10 CFR Part 50 2-step process from the 10 CFR Part 52 combined license process if a construction permit applicant is permitted to reference a design certification rule and the final design and ITAAC are given full issue preclusion in the operating license proceeding? To the extent this circumstance approximates a combined



license, without being one, is it inconsistent with Section 189(b) of the Atomic Energy Act (added by the Energy Policy Act of 1992) providing specifically for combined licenses?

9(b)(1) Should operating license applicants under 10 CFR Part 50 be allowed to reference design certification rules to satisfy the relevant requirements of 10 CFR Part 50? (Refer to discussion in III.J)

(2) What should be the legal consequences, from the standpoints of issue resolution in the operating license proceeding, NRC enforcement and licensee operation if a design certification rule is referenced by an applicant for an operating license under 10 CFR Part 50?

(c) Is it necessary to resolve these issues as part of the design certification, or may resolution of these issues be deferred without adverse consequence (e.g., without foreclosing alternatives for future resolution).

## RESPONSE

Applicants for construction permits (CP) and operating licenses (OL) under Part 50 should be allowed to reference the design certification rule. Any other result would be inconsistent with Part 52, which clearly states that applicants for CPs and OLs may reference a design certification (see, e.g., §§ 52.55(b), 52.55(c), 52.63(a)(4), 52.63(b)(1), 52.63(c)).

As discussed in Attachment B, Section I.D, a design certification should have issue preclusion in all subsequent proceedings, including in CP, OL, license amendment, and enforcement proceedings.

As discussed in Attachment B, Section X, a construction permit applicant should be permitted, but not required, to reference the ITAAC. If the construction permit applicant does not reference the ITAAC, construction-related issues would be subject to NRC review and an opportunity for public hearing at the OL stage in the same manner that construction-

related issues are currently subject to NRC review and an opportunity for hearings at the OL stage for plants that do not reference a design certification.

The design certification rules should not require a construction permit applicant who references the design certification rule to utilize the ITAAC. Such a requirement would, in essence, be contrary to the intent of Part 52, convert a CP into a COL and eliminate any reason for a CP applicant to reference a design certification rule.

We believe that it is necessary for the Commission to resolve these issues now and not to defer them until after design certification. Both the proposed rule and the DCD Introduction contain explicit provisions related to use of the design certification by license applicants and licensees under Part 50 and 52. The industry desires to reinforce its ability to use a design certification in Part 50 proceedings. Once the final design certification rule is issued, the provisions in the rule become final and are binding. Furthermore, it would not be sufficient to delete all mention of CPs and OLs in the design certification, because the deletion or omission of such references could itself be construed in the future by the NRC or the courts as precluding a CP or OL applicant from referencing a design certification.