



RULEMAKING ISSUE (Notation Vote)

February 1, 1995

SECY-95-023

FOR: The Commissioners

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: PROPOSED DESIGN CERTIFICATION RULES FOR THE ADVANCED BOILING
WATER REACTOR (ABWR) AND SYSTEM 80+ STANDARD DESIGNS

PURPOSE:

To obtain Commission approval for the publication of the attached Federal Register Notices (FRN) for the proposed design certification rules for both the Advanced Boiling Water Reactor (ABWR) and the System 80+ standard designs (Attachments 1 and 2), subject to the completion of their design control documents (DCD).

BACKGROUND:

The staff originally proposed a design certification rule for evolutionary standard plant designs in SECY-92-287, "Form and Content for a Design Certification Rule" and subsequently briefed the Commission on September 8, 1992. On March 26, 1993, the staff issued SECY-92-287A in which it responded to issues put forth by the Commission in its SRM in response to SECY-92-287 and to specific questions raised by Commissioner Curtiss in a letter dated September 9, 1992. The proposed rule in SECY-92-287 was then modified to incorporate Commission guidance and was published in the Federal Register as an Advanced Notice of Proposed Rulemaking (ANPR) on November 3, 1993 (58 FR 58665), for public comment. On November 23, 1993, the staff solicited further comment on this rulemaking when it conducted a public workshop entitled "Topics Related to Certification of Evolutionary Light Water Reactor Designs." All holders of operating licenses or construction permits were informed of the issuance of the ANPR and the planned public workshop through the issuance of NRC Administrative Letter 93-05 on October 29, 1993. Separate announcements of the workshop were also sent to the Union of Concerned Scientists, the Nuclear Information and Resource Service, the Natural Resources Defense Council, the Public Citizen Litigation Group, the Ohio Citizens for Responsible Energy, and the State of Illinois Department of Nuclear Safety on October 18, 1993.

CONTACT:

Jerry N. Wilson, NRR
(301) 415-3145
Harry S. Tovmassian, RES
(301) 415-6231

NOTE: TO BE MADE PUBLICLY AVAILABLE
IN 3 WORKING DAYS FROM THE
DATE OF THIS PAPER

In parallel with the staff's efforts to develop the form and content of a design certification rule, the Office of the General Counsel (OGC) undertook an effort to determine the detailed rulemaking procedures to be utilized by the Commission. On May 8, 1992, OGC issued SECY-92-170 in which issues relevant to design certification rulemaking procedures were identified and the preliminary analyses and recommendations were presented. Subsequently, OGC conducted a public workshop to facilitate public discussion on the issues raised in SECY-92-170. The transcript of the workshop proceedings and the written comments submitted by workshop attendees following the workshop were analyzed and final OGC recommendations for design certification rulemaking procedures were set forth on November 10, 1992, in SECY-92-381. On April 30, 1993, the Commission issued a memorandum to the General Counsel which sets forth the Commission's determinations with respect to the procedural issues raised by the General Counsel.

DISCUSSION:

Attachments 1 and 2 contain the rulemaking packages for the ABWR and System 80+ standard designs. Each includes a proposed new appendix to Part 52, the statement of considerations, and the public comment summary. Each package contains the environmental assessment upon which public comment is also being sought. Also included are Congressional letters and the Public Announcements. These rulemaking packages are essentially the same. They differ in the following ways:

1. The "BACKGROUND" sections of the FRNs are design specific,
2. The System 80+ package contains two additional exemptions and one additional applicable regulation in Section 5, and
3. The environmental assessments, while basically the same, are also design specific.

The aforementioned ANPR and the November 23, 1993, public workshop were in accordance with the Commission's guidance provided in its April 30, 1993, memorandum to the General Counsel. The purpose of both was to obtain the public's comments on the form and content of design certification rules. The comment period for the ANPR expired on January 3, 1994, with six letters from the public being received. The Nuclear Energy Institute (NEI) has requested additional interaction with the staff on the proposed rule before it is published in the Federal Register. Based upon the extensive interactions with the industry to date and the fact that NEI can participate in the rulemaking process with other interested parties, the staff does not believe that further interaction between the staff and NEI would be beneficial at this time.

COORDINATION:

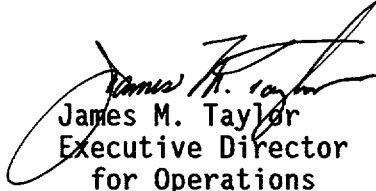
The Office of the General Counsel has reviewed this paper and has no legal objection. The ACRS has reviewed both designs and concluded that acceptable bases and requirements have been established to assure that both standard designs can be used to engineer and construct plants that with a reasonable

assurance can be operated without undue risk to the health and safety of the public. Copies of these FRNs are being provided to the ACRS at this time.

RECOMMENDATION:

That the Commission:

1. Approve the notices of proposed rulemaking for publication.
2. Certify that these rules, if promulgated, will not have a significant economic impact on a substantial number of small entities to satisfy requirements of the Regulatory Flexibility Act, 5 U.S.C. 605(b).
3. Determine that the backfit rule 10 CFR 50.109, does not apply to these proposed rules.
4. Note:
 - a. The rulemaking would be published in the Federal Register for a 120-day public comment period following staff approval of the DCD for both designs (the ABWR DCD has already been approved) and incorporation of Commission comments on the rulemaking packages;
 - b. Approximately 60 days after publication in the Federal Register, the staff plans to conduct a public meeting on both of the proposed rules;
 - c. The Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification regarding economic impact on small entities and the reasons for it, as required by the Regulatory Flexibility Act;
 - d. The proposed rules contain information collection requirements subject to review by OMB;
 - e. The appropriate Congressional Subcommittees will be notified;
 - f. Because this is a significant rulemaking effort, a public announcement will be issued.


James M. Taylor
Executive Director
for Operations

Attachments: 1. Design Certification Rulemaking
Package - ABWR
2. Design Certification Rulemaking
Package - System 80+

Commissioners' comments or consent should be provided directly to the Office of the Secretary by COB Wednesday, February 15, 1995.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Wednesday, February 8, 1995, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

DISTRIBUTION:

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ATTACHMENT 1

DESIGN CERTIFICATION RULEMAKING PACKAGE - ABWR

NUCLEAR REGULATORY COMMISSION

10 CFR PART 52

RIN 3150 - AE87

Standard Design Certification for the
U.S. Advanced Boiling Water Reactor Design

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC or Commission) proposes to approve by rulemaking a standard design certification for the U.S. Advanced Boiling Water Reactor (ABWR) design. The applicant for certification of the U.S. ABWR design was GE Nuclear Energy. The NRC is proposing to add a new appendix to 10 CFR Part 52 for the design certification. This action is necessary so that applicants or licensees intending to construct and operate a U.S. ABWR design may do so by appropriately referencing the proposed appendix. The public is invited to submit comments on this proposed (DCR) and the design control document (DCD) that is incorporated by reference into the DCR (refer to Sections IV and V). The Commission also invites the public to submit comments on the environmental assessment for the U.S. ABWR design (refer to Section VI).

DATE: The comment period expires on [Insert date 120 days following the date of publication in the Federal Register]. Comments received after this date will be considered if it is practical to do so, but the Commission is only able to assure consideration for comments received on or before this date. In

addition, interested parties may request an informal hearing before the Atomic Safety and Licensing Board Panel, in accordance with 10 CFR 52.51, on matters pertaining to this design certification rulemaking. Requests for an informal hearing must be submitted by [Insert date 120 days following the date of publication in the Federal Register].

ADDRESSES: Mail written comments and requests for an informal hearing to: The Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Comments may also be delivered to 11555 Rockville Pike, Rockville, MD, between 7:30 am and 4:15 pm on Federal workdays.

Copies of comments received will be available for examination and copying at the NRC Public Document Room (PDR) at 2120 L Street NW. (Lower Level), Washington, DC. A copy of the environmental assessment and the design control document is also available for examination and copying at the PDR.

FOR FURTHER INFORMATION CONTACT: Harry S. Tovmassian, Office of Nuclear Regulatory Research, telephone (301) 415-6231, Jerry N. Wilson, Office of Nuclear Reactor Regulation, telephone (301) 415-3145, or Geary S. Mizuno, Office of the General Counsel, telephone (301) 415-1639, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

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I. BACKGROUND

On September 29, 1987, General Electric Company applied for certification of the U.S. ABWR standard design with the NRC. The application was made in accordance with the procedures specified in 10 CFR Part 50, Appendix O, and the Policy Statement on Nuclear Power Plant Standardization, dated September 15, 1987. The application was docketed on February 22, 1988 (Docket No. STN 50 605).

On May 18, 1989 (54 FR 15372), the NRC added 10 CFR Part 52 to its regulations to provide for the issuance of early site permits, standard design certifications, and combined licenses for nuclear power reactors. Subpart B of 10 CFR Part 52, established the process for obtaining design certifications. A major purpose of this rule was to achieve early resolution of licensing issues and to enhance the safety and reliability of nuclear power plants.

On December 20, 1991, GE Nuclear Energy (GE), an operating component of General Electric Company's power systems business, requested that its application, originally submitted pursuant to 10 CFR Part 50, Appendix O, be considered as an application for design approval and subsequent design certification pursuant to 10 CFR 52.45. Notice of receipt of this request was published in the Federal Register on March 20, 1992 (57 FR 9749), and a new docket number (52-001) was assigned. GE's application, the ABWR Standard Safety Analysis Report (SSAR) up to and including amendment 35, is available for inspection and copying at the PDR.

The NRC staff issued a final safety evaluation report (FSER) related to the certification of the U.S. ABWR design in July 1994 (NUREG-1503). The FSER documents the results of the NRC staff's safety review of the U.S. ABWR design

against the requirements of 10 CFR Part 52, Appendix O, and delineates the scope of the technical details considered in evaluating the proposed design. A copy of the FSER may be obtained from the Superintendent of Documents, Government Printing Office, Mail Stop SSOP, Washington, DC 20402-9328 or the National Technical Information Service, Springfield, VA 22161. The final design approval (FDA) for the U.S. ABWR design was issued on July 13, 1994, and published in the Federal Register on July 20, 1994 (59 FR 37058). A revised version of the FDA was issued on November 23, 1994 and published in the Federal Register on December 1, 1994 (59 FR 61647).

Since the issuance of 10 CFR Part 52, the NRC staff has been working to implement Subpart B with issues such as the acceptability of using a two-tiered design certification rule and the level of design detail required for design certification. The NRC staff originally proposed a design certification rule for evolutionary standard plant designs in SECY-92-287, "Form and Content for a Design Certification Rule." On March 26, 1993, the NRC staff issued SECY-92-287A in which it responded to issues on SECY-92-287, which were put forth by the Commission and to specific questions raised by Commissioner Curtiss in a letter dated September 9, 1992. Subsequently, the NRC staff modified the draft rule in SECY-92-287 to incorporate Commission guidance and published a draft-proposed design certification rule in the Federal Register on November 3, 1993 (58 FR 58665), as an Advanced Notice of Proposed Rulemaking (ANPR) for public comment. On November 23, 1993, the NRC staff discussed this ANPR in a public workshop entitled "Topics Related to Certification of Evolutionary Light Water Reactor Designs." All holders of operating licenses or construction permits were informed of the issuance of the ANPR and the planned public workshop through the issuance of NRC Administrative Letter 93-05 on October 29,

1993. Separate announcements of the workshop were also sent to the Union of Concerned Scientists, the Nuclear Information and Resource Service, the Natural Resources Defense Council, the Public Citizen Litigation Group, the Ohio Citizens for Responsible Energy (OCRE), and the State of Illinois Department of Nuclear Safety on October 18, 1993. An official transcript of the workshop proceedings is available in the PDR.

Rulemaking Procedures

10 CFR Part 52 provides for Commission approval of standard designs for nuclear power facilities (e.g., design certification) through rulemaking. In accordance with the Administrative Procedure Act (APA), Part 52 provides the opportunity for the public to submit written comments on the proposed design certification rule. However, Part 52 goes beyond the requirements of the APA by providing the public with an opportunity to request a hearing before the Atomic Safety and Licensing Board in a design certification rulemaking. While Part 52 describes a general framework for conducting a design certification rulemaking, § 52.51(a) states that more detailed procedures for the conduct of each design certification will be specified by the Commission.

To assist the Commission in developing the detailed rulemaking procedures, the NRC's Office of General Counsel (OGC) prepared a paper, SECY-92-170 (May 8, 1992), which identified issues relevant to design certification rulemaking procedures, and provided OGC's preliminary analyses and recommendations with respect to those issues. SECY-92-170 was made public by the Commission, and a Commission meeting on this paper was held on June 1, 1992.

Thereafter, in SECY-92-185 (May 19, 1992), OGC proposed holding a public workshop for the purpose of facilitating public discussion on the issues raised in SECY-92-170 and obtaining public comments on those issues. The Commission approved OGC's proposal (See the May 28, 1992, Memorandum from Samuel J. Chilk to William C. Parler). Notice of the workshop was published in the Federal Register on June 9, 1992 (57 FR 24394). The notice also provided for a 30-day period following the workshop for the public to submit written comments on SECY-92-170. A transcript was kept of the workshop proceedings and placed in the PDR. Nearly 50 non-NRC individuals attended the workshop; an additional eight persons requested copies of SECY-92-170 and workshop materials but did not attend. The workshop was organized in a panel format, with representatives from OCRE (Susan Hiatt), NUMARC (Robert Bishop), GE and Westinghouse - two design certification vendors (Marcus Rowden and Barton Cowan), the State of Illinois Department of Nuclear Safety (Stephen England), the State of New York Public Service Commission (James Brew), the Administrative Conference of the United States (William Olmstead), OGC, the NRC Staff, and a moderator. Eleven written comments were received after the workshop, three from OCRE (OCRE August 1992 Comments; OCRE September 1992 Letter; OCRE October 1992 Letter), NUMARC, Winston and Strawn, the State of Illinois Department of Nuclear Safety, Westinghouse Energy Systems, the U.S. Department of Energy, Asea Brown Boveri-Combustion Engineering (ABB-CE), and AECL Technologies¹. Mr. Rowden submitted an additional comment on behalf of NUMARC which addresses proprietary information.

OGC's final analyses and recommendations for design certification rulemaking procedures were set forth in SECY-92-381 (November 10, 1992). This

¹AECL is the vendor for the CANDU 3 design, which is presently undergoing a pre-application design certification review by the NRC Staff.

paper was prepared after consideration of the panel discussions at the public workshop and the written comments received after the workshop. On April 30, 1993, the Commission issued a Memorandum to the General Counsel which sets forth the Commission's determinations with respect to the procedural issues raised by the General Counsel's paper. Section V. below, "Comments and Hearings in the Design Certification Rulemaking," describes the procedures to be utilized in this design certification rulemaking.

II. PUBLIC COMMENT SUMMARY AND RESOLUTION

The public comment period for the ANPR for rulemakings to grant standard design certification for evolutionary light water reactor designs expired on January 3, 1994. Six comment letters were received. Five comment letters were from the nuclear industry (i.e., vendors, utilities, and industry representatives) and one from a public interest organization. Most of the commenters addressed the nine topics upon which the NRC sought the public's views. The Commission has carefully considered all the comments and wishes to express its sincere appreciation of the often considerable efforts of the commenters.

In the following public comment summary and resolution and in the section-by-section analysis (Section III below), the discussion refers to "Commission approval" of NRC staff-proposed positions or recommendations. This should be understood as meaning the Commission's tentative approval of those positions or recommendations for purposes of: (i) the NRC staff's review of the ABWR for System 80+ design certification application, and (ii) preparation of this notice of proposed

rulemaking. The public may submit comments and request an informal hearing with respect to any of the "Commission approved" positions or recommendations (comments and hearing are discussed in further detail in Section V).

All of the commenters supported the basic concept of the design certification rulemaking approach including the two-tiered structure for design information. The Nuclear Management and Resources Council, which has since been subsumed within the Nuclear Energy Institute (NEI), commented for the nuclear industry. GE Nuclear Energy, Westinghouse, and ABB-CE stated that they participated in the preparation of the NEI comments and fully supported them. One additional letter addressing the U.S. ABWR rulemaking was received from Marcus Rowden of the law firm of Fried, Frank, Harris, Shriver & Jacobson, dated September 20, 1994. This letter was written on behalf of GE Nuclear Energy and contained a proposed draft rule for the NRC staff's consideration in the U.S. ABWR rulemaking process. Mr. Rowden's proposed rule is different in some aspects from the rule proposed by the NRC staff in this Federal Register notice. The issues raised by the significant differences between Mr. Rowden's proposed rule and the proposed rule in this Federal Register notice have been appropriately considered and discussed in the following public comment summary and resolution or in the section-by-section discussion:

Topic 1 - Acceptability of a Two-Tiered Design Certification Rule Structure

Comment Summary. On behalf of the nuclear industry, NEI stated that a two-tiered structure to a design certification rule is practical and fully consistent with the intent and requirements of 10 CFR Part 52. OCRE stated that it fully supports the concept set forth in the ANPR provided that the Tier 2

information is subject to public challenge in the standard design certification and any associated hearing.

Response. Although a two-tiered structure for design certification rules was not envisioned or subsequently deemed necessary to implement standard design certifications under 10 CFR Part 52, the Commission approved the use of a two-tiered structure for a design certification rule in its SRM of February 15, 1991, on SECY-90-377, "Requirements for Design Certification Under 10 CFR Part 52," in response to a request from NEI dated August 31, 1990. Since then, the NRC staff has worked to develop a two-tiered rule that achieves industry's goal of issue preclusion, while retaining flexibility for design implementation, for a greater amount of information than was originally planned for design certification.

Tier 1 information is defined in Section 2(b) of the proposed rule and is treated as the certified information that is controlled by the change standards of 10 CFR 52.63. Tier 2 information is defined in Section 2(c) of the proposed rule and consists primarily of the information submitted in an application for design certification. The information in the two tiers is interdependent. Therefore, an applicant for a construction permit, operating license, or combined license (COL) that references this design certification must reference both tiers of information. 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. All matters covered in each tier, including the determination of what information should be placed in each tier, are subject to public challenge in the design certification rulemaking and any associated hearing.

Topic 2 - Acceptability of the Process and Standards for Changing Tier 2 Information

Comment Summary. NEI concurs in the process and standards to be used by COL holders and applicants for evaluating and implementing changes to Tier 2 information via the so-called "\$ 50.59-like" change process. However, NEI does not agree with the statement in the ANPR (Section A.13(d)(3)) that "changes properly implemented through this "\$ 50.59-like" process cause a loss of finality relative to the affected portion of the design or are subject to subsequent legal challenge." NEI contends that these changes would be sanctioned through the design certification rule and that the only issue entertainable at the time of the COL licensing proceeding would be whether the licensee complied with the "\$ 50.59-like" change process. Likewise, changes made subsequent to COL issuance could be challenged in the Part 52 proceeding before fuel-load authorization only on the basis that the change resulted in noncompliance with applicable acceptance criteria. However, NEI recognizes that changes from Tier 2 that require NRC approval would be subject to a hearing opportunity as specified in 10 CFR Part 52.

OCRE stated that it is important that applicant or licensee initiated changes to Tier 2 information made pursuant to the "\$ 50.59-like" process will no longer be afforded the issue preclusion protection of 10 CFR 52.63. To do otherwise would turn the two-tiered system into a double standard in which utilities could deviate from the standard design but the public could not challenge these deviations. Permitting site-specific litigation of these changes would also serve to discourage changes.

Response. In order to implement the two-tiered structure for design certification rules, the Commission proposes a change process for Tier 2

information that has the same elements as the Tier 1 change process. Specifically, the Tier 2 change process has provisions for generic changes, plant-specific changes, and exemptions similar to those in 10 CFR 52.63. Although the NRC staff proposed that the backfitting standards for making generic changes to Tier 2 information should be less stringent than those for Tier 1 information, the Commission disapproved this proposal in its SRM on SECY-92-287A, dated June 13, 1993, and stated that "the backfitting standards of 10 CFR 52.63 should be applied for such changes to Tier 2." As a result, the NRC staff used the backfitting standards of 10 CFR 52.63 in the Tier 2 change process proposed in the ANPR, except that the additional factor regarding "any decrease in safety that may result from the reduction in standardization" was not adopted for plant-specific changes and exemptions in Section A.13(d) in order to achieve additional flexibility for Tier 2 information.

The Tier 2 change process also has a provision similar to 10 CFR 50.59 that allows changes to Tier 2 information by an applicant or licensee, without prior NRC approval, subject to certain restrictions. The Commission approved this process in its SRM on SECY-90-377, dated February 15, 1991, provided "that such changes open the possibility for challenge in a hearing." The NRC staff followed the Commission's guidance in developing the process in ANPR Section A.13(d)(3) that allows certain changes to Tier 2 information, without prior NRC approval. This section of the ANPR states that "Tier 2 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)." The NRC staff included this provision to meet Commission guidance and to restrain Tier 2 changes in order to maintain the benefits of standardization, as discussed in SECY-92-287. Also, changes may be challenged in individual COL

proceedings since the changes depart from the design information approved in the design certification rulemaking. Therefore, the Commission agrees with the OCRE position on issue preclusion and specifically invites comments on this provision (see Section IV).

Topic 3 - The Acceptability of a Tier 2 Exemption

Comment Summary. NEI supports the inclusion of the provision that an applicant or licensee may request, and the NRC may grant, an exemption to Tier 2 information. OCRE indirectly supports the Tier 2 exemption provision but recommends that the sentence: "These Tier 2 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)" also be included in the Section A.13(d)(2) of the ANPR on exemptions from Tier 2 information, for clarity, and because 10 CFR 52.63(b)(1) does not mention the two-tiered system.

Response In SECY-92-287A, the NRC staff proposed the addition of an exemption provision to the Tier 2 change process so that the change process for both tiers would have the same elements and to provide additional flexibility to applicants or licensees that reference a design certification rule. The Commission deferred its decision on an exemption to the Tier 2 change process in its SRM dated June 23, 1993, and requested the NRC staff to solicit public comments on this issue.

Because no commenter objected to the addition of a Tier 2 exemption process and NEI supported the proposal, the provision was retained in the proposed rule. However, OCRE proposed that Tier 2 exemptions lose issue preclusion consistent with Tier 1 exemptions. Because that is consistent with the NRC staff's approach to Tier 2 changes and the Commission's guidance in its

SRM on SECY-90-377 (see response to topic #2), OCRE's proposal has been incorporated into the proposed rule.

The additional standard in the Tier 1 exemption process, which requires that "any decrease in safety that may result from the reduction in standardization caused by the exemption" outweighs the special circumstances in 10 CFR 50.12, and was not included in the Tier 2 exemption process because the Commission views Tier 2 information as more detailed descriptions of Tier 1 information that should have a less stringent change standard than Tier 1 and the industry requested additional flexibility for Tier 2 information. Therefore, the proposed Tier 2 change process uses the same standard that is used for Part 50 exemptions, namely 10 CFR 50.12. The Commission believes that the loss of issue preclusion for Tier 2 exemptions will help minimize the consequences of the loss of standardization caused by these exemptions.

Topic 4 - Acceptability of Using a Change Process, Similar to the One in 10 CFR 50.59 Applicable to Operating Reactors, Prior to the Issuance of a Combined License that References a Certified Design

Comment Summary. NEI concurs in the NRC's proposal to have the "§ 50.59-like" change process apply to both COL applicants and licensees.

Response. In its SRM on SECY-92-287A, dated June 23, 1993, the Commission approved the NRC staff's proposal to extend the use of the "§ 50.59-like" change process for Tier 2 information to applicants that reference a certified design for purposes of a proposed design. Because NEI and other commenters supported this proposal, this additional flexibility has been retained for the proposed rule.

Topic 5 - The Acceptability of Identifying Selected Technical Positions from the FSER as "Unreviewed Safety Questions" that Cannot Be Changed Under a "Section 50.59-Like" Change Process

Comment Summary. NEI commented that the proposal to predesignate changes to certain design aspects as constituting "unreviewed safety questions" is unnecessary and is tantamount to the creation of a third tier of information, which runs counter to the two-tier structure. NEI proposed that the selected Tier 2 material be designated, not broadly in the rule, but specifically in the SSAR/FSER and the DCD as requiring NRC staff notification before implementing the changes. NEI argued that at the time of notification, the NRC staff could decide whether the proposed change constitutes an "unreviewed safety question," and the applicant or COL holder would be prohibited from making the change without either NRC staff concurrence or a successful appeal of the NRC staff's determination. NEI also envisioned a time, subsequent to completion of designs and the inspections, tests, analyses, and acceptance criteria (ITAAC), when the change restriction for selected Tier 2 material will no longer be necessary. NEI further stated that, whether or not the Commission adopts NEI's proposal, the NRC staff should be limited to design areas discussed with plant designers when designations of "unreviewed safety questions" are made. Also, these special designations should be as narrow and specific as practicable to avoid the inadvertent broadening of this special category of Tier 2 design information and the excessive restrictions against change that would result.

Response. The NRC's proposal to predesignate certain Tier 2 information that cannot be changed without prior NRC approval does not create a third tier of information or conflict with the two-tiered rule structure. In fact, this so-called Tier 2* information was created as a consequence of industry's

implementation of the two-tiered rule structure. Specifically, industry's desire to minimize the amount of information in Tier 1 and to use design acceptance criteria in lieu of design information in certain areas resulted in the need to identify significant Tier 2 information that could not be changed by an applicant or licensee without prior NRC approval. The previous reference to "identified unreviewed safety questions" in the ANPR was made to indicate that the process for changing the so-called Tier 2* information would be the same as for changing other Tier 2 information that an applicant or licensee determines to constitute an unreviewed safety question. Therefore, there is no third tier of information. Rather, some Tier 2 information cannot be changed without prior NRC approval and the remainder can. This is no different than the information in a Final Safety Analysis Report relative to the process in 10 CFR 50.59.

The Commission agrees with NEI that it would be clearer to future users of the certified design if the specific information that has been designated as requiring prior NRC approval (Tier 2*) is identified in the DCD rather than summarized in the design certification rule (DCR). However, the requirement for prior NRC approval does need to be specified in the DCR for the Tier 2 change process. Therefore, the NRC instructed the applicants to identify the Tier 2* information in the DCD.

In response to NEI's request, the DCR will not identify the Tier 2* information as an unreviewed safety question because only prior NRC approval is required. Therefore, the Tier 2 change process has been revised to state that Tier 2* information identified in the DCD cannot be changed without prior NRC approval. Although Tier 2* changes may not result in unreviewed safety questions, the public will be afforded an opportunity to challenge the changes (see response to topic #2). The Commission also agrees that the predesignation

of some of the Tier 2* information can expire when the plant first achieves 100% power while other Tier 2* information must remain in effect throughout the life of the plant that references the DCR. This is because there is sufficient information in Tier 1 to control changes after the plant is completed. The appropriate expiration point is designated in their DCDs.

The NEI proposal to require notification of the NRC rather than requiring NRC approval prior to changing the Tier 2* information would create an unnecessary burden on the NRC in the Tier 2 change process. The Commission has already determined that the predesignated Tier 2 information is significant and cannot be changed before NRC approval. Therefore, the Commission has not adopted the "notification" proposal. Also, the designation of Tier 2* information is not an excessive restriction on the change process. Rather, it compensates for industry's request to minimize the amount of information in Tier 1.

Topic 6 - Need for Modifications to 10 CFR 52.63(b)(2) If the Two-Tiered Structure for the Design Certification Rule is Approved

Comment Summary. OCRE commented that modifications to § 52.63 are not necessary because the design certification rules would also become regulations. NEI commented that changes to 10 CFR Part 52 are not needed at this time but that some changes to Part 52 may be identified as appropriate for future consideration based on experience with the initial design certifications.

Response. When Part 52 was written, § 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). Now that the Commission has decided to implement a two-tiered rule structure as described in the response to Topic #1, the two-tiered change process applies to all information referenced by

the design certification rule. Therefore, there does not appear to be a need for § 52.63(b)(2) in a two-tiered rule structure.

In the absence of any perceived need for changes to 10 CFR 52.63(b)(2) to accommodate the two-tiered concept in design certification, the Commission does not intend to modify 10 CFR Part 52 at this time. However, as NEI suggests, the Commission is evaluating the need for changes to Part 52 as it gains experience with the initial design certification reviews.

Topic 7 - Whether the Commission Should Either Incorporate or Identify the Information in Tier 1 or Tier 2 or Both in the Combined License

Comment Summary. On the question of whether Tier 1 or Tier 2 information should be incorporated in the combined license (COL) or identified in the COL, NEI stated that this question need not be resolved for design certification purposes but provided two alternatives for future NRC consideration. Alternative one would be to incorporate Tier 1 information and identify Tier 2 information in the COL. The second alternative would be to incorporate both tiers of information in the rule, provided that the Tier 2 change provisions are incorporated in the rule as well.

OCRE stated that both Tier 1 and Tier 2 information should be incorporated in the COL because both tiers contain important design information.

Response. The NRC is deferring the decision on this issue because resolution of this issue is not needed to develop a design certification rule. However, because the commenters all supported incorporation of both tiers of information, the NRC staff will evaluate that option for a combined license under Subpart C of 10 CFR Part 52..

Topic 8 - Acceptability of Using Design Specific Rulemakings Rather Than Generic Rulemaking for the Technical Issues Whose Resolution Exceeds Current Requirements

Comment Summary. NEI, GE Nuclear Energy, and Westinghouse Electric Corporation took exception with the NRC position on the issue of designating severe accident and technical requirements, beyond those in current regulations as "applicable regulations" in the design certification rule. NEI stated that "Commission approved NRC staff positions will be reflected in a design certification rule by means of design provisions contained in Tier 1 and Tier 2 of the DCD incorporated in the rule." NEI argued that the NRC staff's proposed approach would result in needless duplication, complexity, and delay because matters that have been agreed to in detail would then be formulated in broadly stated positions requiring another round of extensive discussions to reach agreement in a process equivalent to a series of complex, discrete rulemakings. In addition, NEI stated that these "broadly stated, free standing applicable regulations carry the potential for new and diverse interpretations by the NRC staff during the life of the design certification." These interpretations may be at odds with the understandings that translated into specific Tier 1 and Tier 2 requirements in the DCD. GE Nuclear Energy reiterated these comments but added that "The course proposed by the NRC staff would enormously complicate pre-rulemaking preparation, the conduct of the rulemakings themselves and COL licensing and post-licensing facility construction and operation. It would, moreover, impose schedule delays and generate needless duplication, if not outright conflicts." Also, NEI saw little difference between the proposal to incorporate applicable regulations in design certification rules and the similar effect of proceeding with generic severe accident rulemaking.

OCRE stated that the resolution of technical issues whose resolution exceeds current requirements will likely be design-specific and therefore, it may make little difference whether the rulemakings are design-specific or generic. OCRE further stated that, if the NRC wants all plants constructed after a certain date to incorporate certain design features or otherwise address certain technical issues, then a generic rulemaking may be the safest and most cost-effective way to accomplish this goal. OCRE also noted that a generic rule would cover an applicant that might decide not to use a standard certified design.

Response. The Commission has used design-specific rulemaking rather than generic rulemaking for the selected technical and severe accident issues that go beyond current requirements for light-water reactors (LWRs). The Commission adopted this approach early in the review process

because it believed that the new requirements would be design-specific, as OCRE stated. Also, the NRC was concerned that generic rulemakings would cause significant delay in the design certification reviews. The Commission approved this approach in its SRM on SECY-91-262, dated January 28, 1992, and has continued to support this approach for evolutionary LWRs, as stated in its SRM on SECY-93-226, dated September 14, 1993. The Commission has deferred its decision on the need for generic rulemaking for advanced LWRs.

Both the industry and OCRE concluded that there would be little difference in the requirements for the certified designs, regardless if the approach was generic or design-specific. The Commission agrees that at the conclusion of the design certification rulemaking the effect of the new regulations is basically the same but that the specific wording of the regulations may have been different if generic rulemaking was used.

In implementing the goals of 10 CFR Part 52 and the Commission's Severe Accident Policy Statement (50 FR 32138; August 8, 1985), the NRC staff set out to achieve a higher level of safety performance for both evolutionary and passive LWR designs in the area of severe accidents and in other selected areas. The NRC staff proposed new requirements to implement these goals in various Commission papers, such as SECY-90-016 and SECY-93-087. The NRC staff then selected the applicable requirements for each evolutionary design and evaluated the design information that describes how those requirements were met in the FSERs for the U.S. ABWR and System 80+ designs. In the proposed rule for each design, the NRC has identified these requirements as applicable regulations in order to specify the requirements that were applicable and in effect at the time the certification was issued for the purposes of §§ 52.48, 52.54, 52.59, and 52.63.

These applicable regulations, which were identified in each FSER, are set forth in the design certification rule, with minor editing, to achieve codification through the design certification rulemaking. These codified regulations, which supplement the list of regulations in § 52.48, become part of the Commission's regulations that are "applicable and in effect at the time the certification was issued." Without this complete list of applicable regulations, the NRC staff could not perform reviews in accordance with §§ 52.59 and 52.63. By codifying these requirements, the NRC intends to make it clear that for the purpose of renewal of a certified design under § 52.59, these requirements are part of the applicable regulations in effect at the time that the design certification was first issued. The NRC also intends to make it clear that the Commission may, pursuant to § 52.63(a)(1) and (3), impose modification of Tier 1 information or to issue a plant-specific order,

respectively, to ensure that the certified design or the plant complies with the applicable regulations of the design certification rule. The rationale is that the Commission could not, without re-reviewing the merits of each position, impose a change to Tier 1 information or issue a plant-specific order merely because the modification was necessary for compliance with a matter involving these proposed requirements. Also, the Commission would not have a complete baseline of regulations for evaluating proposed changes from the public, applicants, or licensees, thereby degrading the predictability of the licensing process.

The codification of these proposed requirements, in reference to § 52.48, is also necessary for two other reasons. First, it serves as a basis for obtaining public comment on the proposed adoption of the requirements as applicable regulations. Second, it provides confirmation that the requirements are being adopted by the Commission as applicable regulations under § 52.54 for the design certification being approved. 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 proposed requirements used during its review of the design. This is because the requirements are not "applicable standards and requirements of the ...Commission's regulations" without further Commission action under § 52.54.

By identifying the regulations that are applicable to each design, the Commission has improved the stability and predictability of the licensing process. By approving the design information that describes how these regulations were met, the Commission has minimized the potential for a differing interpretation of the regulations. Finally, the NRC staff told NEI in a meeting on April 25, 1994, and in a letter dated July 25, 1994, that the industry-

proposed alternative to applicable regulations was unacceptable. The NRC staff stated that design information cannot function as a surrogate for design-specific (applicable) regulations because this information describes only one method for meeting the regulation and would not provide a basis for evaluating proposed changes to the design information. Therefore, consideration of the comments on Topic #8 has not altered the Commission's decision to proceed with design-specific rulemaking for the proposed requirements and to publish the appropriate applicable regulations in each design certification rule.

Topic 9 – The Appropriate Form and Content of a Design Control Document (DCD).

Comment Summary. Concerning the form and content of the DCD, NEI envisioned a document that consisted of three parts including an introductory section, Tier 1 information, and Tier 2 information. NEI also proposed an algorithm that described the industry's view of the contents of a DCD.

NEI stated that, based on its interactions with the NRC staff on the guidance for preparing a DCD, two main issues have emerged. The first issue is the nature and treatment for rulemaking purposes of secondary references contained in the DCD. At issue is the extent to which references to codes, standards, Regulatory Guides, etc. need to be explicitly "incorporated by reference" in specific design certification rules (DCRs). It is industry's position that the burden of incorporating these secondary references into the rule would outweigh the increase in regulatory certainty and predictability that such an effort would provide. The second issue relates to the regulatory significance of information contained in the DCD and, in particular, design Probabilistic Risk Assessment (PRA) information. Specifically, NEI is concerned

with the inclusion of the design PRA in the DCD and a perceived requirement to use the PRA to support the "50.59-like" change process.

Response. As defined in SECY-92-287, the DCD is the master document that contains the Tier 1 and 2 information referenced by the design certification rule. The NRC staff has had several meetings with the design certification applicants on the preparation of a DCD and provided guidance to the applicants in letters dated August 26, 1993; August 3 and 5, 1994; and October 4, 1994. Although the Commission agrees with NEI on the basic form of the DCD, it does not agree with NEI's proposed algorithm on the contents of a DCD.

Because the DCD is the master reference document, it should, to the extent possible, retain as much of the applicant's standard safety analysis report (SSAR), as required in 10 CFR 52.47. Due to the requirement that all information incorporated in the rule be publicly obtainable proprietary and safeguards information cannot be included in the DCD. Also, the NRC concluded that the detailed methodology and quantitative portions of the design PRA do not need to be included in the DCD but the assumptions, insights, and discussions of PRA analyses must be retained in the DCD. The NRC also described that COL applicants and licensees will be encouraged, but not required, to use the PRA to support the change process. This position was predicated in part upon NEI's acceptance, in conceptual form, of a future generic rulemaking that requires a COL applicant or holder to have a plant-specific PRA that updates and supersedes the design PRA to account for site-specific and detailed as-built aspects of the plant. The Commission approved the requirement for a plant-specific PRA in its SRM on SECY-94-182, "Probabilistic Risk Assessment (PRA) Beyond Design Certification," in approving the development of a generic "Operational Rule" that would apply to all COL applicants and holders. The remainder of the

applicant's SSAR, including all of the assumptions, issue resolutions, and safety analyses, should be retained in the DCD.

With regard to NEI's concern with secondary references, the NRC staff met with NEI on January 6, 1994, and issued a letter to NEI on May 3, 1994, that documented an agreement with the industry on the resolution of this issue. The agreement states that combined license (COL) applicants and licensees who reference a DCR will treat these secondary references as requirements, in the context that they are described, in the documents referenced in the DCD. However, these secondary references will not be incorporated by reference in the DCR and there is no issue preclusion for secondary. With the above stated guidance, the NRC believes that the appropriate form and content of a DCD has been defined.

III. SECTION-BY-SECTION DISCUSSION OF DESIGN CERTIFICATION RULE

Pursuant to 10 CFR Part 52, Subpart B, the NRC has been working for some time to develop a rule that will achieve the Commission's goals for standard design certifications. Therefore, this proposed rule seeks to achieve the early resolution of safety issues and to enhance the safety and reliability of nuclear power plants. The Commission also expects to achieve a more predictable and stable licensing process through the certification of standard designs by rulemaking. An applicant for a combined license (COL) that references a design certification rule (DCR) must meet the requirements in the DCR and in the design control document that is incorporated by reference in the DCR.

The NRC staff's first proposal of a standard design certification rule was provided in Enclosure 1 to SECY-92-287, dated August 18, 1992. This proposal

was modified based on Commission guidance, and an updated version was published in Appendix 2 to the ANPR. The proposed rule in this Federal Register notice has the same basic form and content as the ANPR version, but there has been some reorganization of the contents. The following discusses the purpose and key aspects of each section of the rule and also discusses issues raised on those sections that are not covered in the public comment summary. Changes made to the ANPR version of the proposed rule for the sake of clarity, brevity, consistency, or organization are not discussed below. All references to the proposed rule are to the provisions in proposed Appendix A Part 52.

A. Scope

The purpose of Section 1 of the proposed rule entitled, "Scope," is to identify the standard plant design that is to be approved by this design certification rule. The applicant for certification of the design is also identified in this section. While the design certification applicant does not have special rights pursuant to this rule, the implementation of 10 CFR 52.63(c) depends on whether an applicant for a COL contracts with the design certification applicant to provide the certified design. If the COL applicant does not use the design certification applicant to provide the design, then it may have to meet the requirements in 10 CFR 52.631(c). Also, the proposed rule imposes a requirement on the design certification applicant in Section 9(a)(1). Therefore, identification of the design certification applicant is necessary to implement this rule.

Because the requirements of 10 CFR 52.63(c) apply to an applicant for a COL, the NRC proposes that this requirement be added to 10 CFR Part 52 of

Subpart C, specifically to a new Section 10 CFR 52.79(e). The NRC requests comments on the desirability of making this change to 10 CFR Part 52 (refer to Section IV).

B. Definitions

The terms Tier 1, Tier 2, and Tier 2* are defined in Section 2, of the proposed rule entitled "Definitions," because these concepts were not envisioned at the time that 10 CFR Part 52 was developed. The design certification applicants and the NRC used these terms in implementing the two-tiered rule structure that was proposed by industry after the issuance of Part 52 (refer to discussion on Topic #1). The design control document (DCD) contains both the Tier 1 and 2 information, along with an introduction. After the issuance of the ANPR, the phrase Tier 2* was added to the list of definitions. Some of the information in Tier 2 requires special treatment in the change process was commonly referred to as Tier 2* during the design review. Therefore, the Commission believes that it would be useful to define and use this phrase in the proposed rule. Further information on changes to or departures from information in the DCD is provided below in the discussion on Section 8, "Change Process." The NRC requests suggestions on other words or phrases that may need to be identified in this rule (refer to Section IV).

C. [Reserved]

The purpose of Section 3, "Information collection requirements," in the proposed rule was originally intended to provide the citation for the control

number which has been assigned by the Office of Management and Budget when it approved the information collection requirements in this rulemaking. Because this citation has been placed in § 52.8, Section 3 to the rule is no longer necessary.

D. Contents of the design certification

Section 4 of the proposed rule entitled, "Contents of the design certification," of the proposed rule identifies the design-related information that is incorporated by reference into this rule [4(a)] and includes some related provisions of the proposed rule [4(b) and (c)]. Both tiers of design-related information have been combined into a single document, called the design control document (DCD), in order to effectively control this information and facilitate its incorporation into the rule by reference (refer to Topic #9 for discussion on the DCD). The DCD was prepared to meet the requirements of the Office of the Federal Register (OFR) for incorporation by reference (10 CFR Part 51). Section 4(a) of this proposed rule would incorporate the DCD by reference upon approval of the Director, OFR. The legal effect of incorporation by reference is that the material is treated as if it were published in the Federal Register. This material, like any other properly issued regulation, has the force and effect of law.

An applicant for a construction permit or COL that references this design certification rule must conform with the requirements in the proposed rule and the DCD. The master DCD for this design certification will be archived at NRC's central file with a matching copy at OFR. Copies of the up-to-date DCD will also be maintained at the NRC's Public Document Room and library. Questions

concerning the accuracy of information in an application that references this design certification will be resolved by checking the master DCD in NRC's central file. If a generic change rulemaking is made to the DCD pursuant to the change process in Section 8 of the proposed rule, then at the completion of the rulemaking the NRC will change its copies of the DCD and notify the OFR and design certification applicant to change their copies.

The applicant for this design certification rule is responsible for preparing the DCD in accordance with NRC and OFR requirements and maintaining an up-to-date copy pursuant to Section 9(a)(1) of the proposed rule. Plant-specific changes to and departures from the DCD will be maintained by the applicant or licensee that references this design certification pursuant to Section 9(a)(2) of the proposed rule. In order to meet the requirements of OFR for incorporation by reference, the originator of the DCD (design certification applicant) must make the document available upon request after the final design certification rule is issued. Therefore, the proposed rule states that copies of the DCD can be obtained from the applicant or an organization designated by the applicant. The applicant for this design certification has stated that it plans to request distribution of its DCD by the National Technical Information Service (NTIS). If the applicant selects an organization, such as NTIS, to distribute the DCD, then the applicant must provide that organization with an up-to-date copy. A copy of the DCD must also be made available at the NRC and OFR.

The DCD contains an introduction that explains the purpose and uses of the DCD and two tiers of design-related information. The significance of designating design information as Tier 1 or Tier 2 is that different change processes and criteria apply to each tier, as explained in Section H "change

process" below. The introduction to the DCD 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.

The Tier 1 portion of the design-related information contained in the DCD is **certified** by this rule. This information consists of an introduction to Tier 1, the certified design descriptions and corresponding inspections, tests, analyses, and acceptance criteria (ITAAC) for systems and structures of the design, design material applicable to multiple systems of the design, significant interface requirements, and significant site parameters for the design. The NRC staff's evaluation of the Tier 1 information, including a description of how this information was developed is provided in Section 14.3 of the FSER.

The information in the Tier 1 portion of the DCD was extracted from the detailed information contained in the application for design certification. The Tier 1 information addresses the most safety-significant aspects of the design, and was organized primarily according to the structures and systems of the design. Additional design material and related ITAAC is also provided in Tier 1 for selected design and construction activities that are applicable to multiple systems of the design. The Tier 1 design descriptions serve as design commitments for the lifetime of a facility referencing the design certification, and the ITAAC verify that the as-built facility conforms with the approved design and applicable regulations. In accordance with 10 CFR 52.103(g), the

Commission must find that the acceptance criteria in the ITAAC are met before operation. After the Commission has made the finding required by 10 CFR 52.103(g), the ITAAC do not constitute regulatory requirements for subsequent modifications. However, subsequent modifications to the facility must comply with the certified design material, unless changes are made in accordance with the change process in Section 8 of this proposed rule.

The Tier 1 interface requirements are the most significant of the interface requirements for the standard design, which were submitted in response to 10 CFR 52.47(a)(1)(vii), that must be met by the site-specific portions of a facility that references the design certification. The Tier 1 site parameters are the most significant site parameters, which were submitted in response to 10 CFR 52.47(a)(1)(iii), that must be addressed as part of the application for a construction permit or COL.

Tier 2 is the portion of the design-related information contained in the DCD that is **approved** by this rule but is not certified. Changes to or departures from the certified design material (Tier 1) must comply with Section 8(a) of this proposed rule. Changes to or departures from the approved information (Tier 2) must comply with Section 8(b) of this proposed rule. Tier 2 includes the information required by 10 CFR 52.47 and 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 the more detailed Tier 2 information provides a sufficient method, but not the only acceptable method, for complying with the more general design requirements included in Tier 1. A supplementary description of Tier 2 information is provided in the DCD introduction. If an applicant or licensee used methods

other than those described in Tier 2, then the alternative method would be open to staff review and a possible subject for a hearing.

When completing the design information for a plant, an applicant for a COL must conform with all of the requirements in the DCD, unless the information in the DCD is changed pursuant to the process in Section 8 of this proposed rule. The change process defines the procedural differences between Tier 1 and 2. Accordingly, 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 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, as set forth in a letter from Dennis Crutchfield of the NRC to Joe Colvin of the Nuclear Energy Institute, dated May 3, 1994.

An applicant for a construction permit or COL that references this proposed rule must also describe those portions of the plant design which are site-specific, and demonstrate compliance with the interface requirements, as required by 10 CFR 52.79(b). The COL applicant does not need to conform with the conceptual design information in the DCD that was provided by the design certification applicant in response to 10 CFR 52.47(a)(1)(ix). The conceptual design information was required as examples of site-specific design features to facilitate the design certification review, and it is neither Tier 1 nor 2. The introduction to the DCD identifies the location of the conceptual design information and explains that this information is not applicable to a COL application.

An applicant must address COL Action Items, which are identified in the DCD as COL License Information, in its COL application. The COL Action Items (COL License Information) identify matters that need to be addressed by an applicant or licensee that references the design certification, as required by 10 CFR 52.77 and 52.79. A further explanation of the status of the COL License Information is provided in the DCD introduction. Also, the detailed methodology and quantitative portions of the design-specific probabilistic risk assessment (PRA), as required by 10 CFR 52.47(a)(1)(v), was not included in the DCD. The NRC agreed with the design certification applicant's request to delete this information because conformance with the deleted portions of the PRA is not required. The NRC's position is also predicated in part 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.

The application for design certification contained proprietary and safeguards information. This information was part of the NRC staff's bases for its safety findings in the FSER. However, because of OFR requirements, this information could not be included in the DCD. Therefore, the proprietary and safeguards information, or its equivalent, that was provided in the design certification application but not included in the DCD, must be included as part of a COL application. The NRC considers this information to be requirements for plants that reference this rule. Since this information was not included in the DCD or otherwise approved by OFR for "incorporation by reference," it would not have issue preclusion in a construction permit or COL proceeding.

There is other information that is within the scope of the certified design (i.e. as-built, as-procured, and evolving technology design information)

that must be provided as part of a COL application. This detailed design information must be completed in accordance with the requirements in the DCD and the acceptance criteria in ITAAC, including DAC. Since the Tier 1 and 2 information is solely contained within the DCD, the remainder of the design-related information that is developed by a COL applicant or holder that references this proposed rule will not be either Tier 1 or 2 information, whether it is within the scope of the design certification or not. Therefore, the change process in Section 8 of this proposed rule will not control this COL information. Although the change process for this COL information does not need to be developed until a COL application is submitted, the NRC is interested in the public's view on how this information should be controlled (refer to Section IV).

The purpose of Section 4(b) of this proposed rule is to ensure that an applicant that references this design certification references both tiers of information in the DCD. The two tiers of information were developed together and both tiers of information are needed to complete the design of a plant that references the rule. For example, the ITAAC in Tier 1 contains not only the acceptance criteria for verifying that the as-built plant conforms with the approved design, but it also contains various design processes with acceptance criteria (DAC), for completing selected areas of the plant design. The DAC are described in Section 14.3 of the SSAR and FSER. The 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. 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 (See Section J for further discussion).

The applicant for design certification initially prepared the DCD to be consistent with the SSAR and the NRC staff's FSER. The applicant for design certification made some corrections and clarifications to the DCD since the completion of the SSAR and issuance of the FSER. If there is an inconsistency between the SSAR and the FSAR, or between either of these documents and the DCD, then the DCD is the controlling document. That is the purpose of Section 4(c) of this proposed rule.

E. Exemptions and applicable regulations

The purpose of Section 5 of the proposed rule entitled, "Exemptions and applicable regulations," of the proposed rule is to identify the complete set of regulations that were applicable and in effect at the time the design certification was issued for the purposes of 10 CFR 52.48, 52.54, 52.59, and 52.63. In accordance with 10 CFR 52.48, the NRC staff used the technically relevant regulations (safety standards) in 10 CFR Parts 20, 50, 73, and 100 in performing its review of the application for design certification. The effective date of the applicable regulations is the date of the FSER, as set forth in Section 5(b) of the proposed rule. During its review of the application for design certification, the NRC staff identified certain regulations for which application of the regulation to the standard design would not serve or was not necessary to achieve the underlying purpose of the regulation. These proposed exemptions to the NRC's current regulations are

identified in Section 5(a) of this proposed rule. The basis for these exemptions is provided in the FSER.

In implementing the goals of 10 CFR Part 52 and the Commission's Severe Accident Policy Statement, the NRC staff set out to achieve a higher level of safety performance for both evolutionary and passive LWR standard designs in the area of severe accidents and in other selected areas. As a result, the NRC staff proposed new requirements in various Commission papers, such as SECY-90-016 and SECY-93-087, to be used in the design certification review and treated as applicable regulations in the design certification rulemaking (refer to discussion on Topic #8). The bases for these requirements are set forth in SECY-90-016 and SECY-93-087. The Commission approved the use of these proposed regulations for purposes of the design certification review in the respective SRMs. These proposed regulations deviated from or were not embodied in current regulations applicable to the standard design. The NRC staff then selected proposed regulations that were applicable to the design under review and reviewed the design pursuant to these applicable regulations. The FSER identifies the applicable regulations that were used and describes how these regulations were met by the design-related information in the SSAR. The Commission approved the evaluation of the design pursuant to the applicable regulations in its approval to publish the FSER.

These proposed applicable regulations are identified in Section 5(c) of this proposed rule to achieve codification through the design certification rulemaking. The proposed applicable regulations in Section 5(c) are substantively the same as those in the FSER but have been edited for clarity. These codified requirements, which supplement the regulations in Section 5(b), will become part of the Commission's regulations that were "applicable and in

effect at the time the certification was issued," if the Commission adopts them in the final design certification rule." The codification of these additional requirements, in reference to 10 CFR 52.48, is necessary for two reasons. First, it serves as a basis for obtaining public comment on the adoption of the proposed requirements as applicable regulations. Second, it provides confirmation that the requirements are being adopted by the Commission as applicable regulations under § 52.54 for the design certification being approved.

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 requirements used during its review of the design. This is because the proposed requirements, without further Commission action, could be agreed as not being "applicable standards and requirements of the ...Commission's regulations" under § 52.54. Also, without codification of the applicable regulations, the NRC could not perform its reviews in accordance with §§ 52.59 and 52.63. By codifying these requirements, the NRC intends that for renewal of a certified design under § 52.59, these requirements are part of the applicable regulations in effect at the time that the design certification was first issued.

The Commission may, pursuant to § 53.63(a)(1) and (3), impose a modification of Tier 1 information or to issue a plant-specific order, respectively, to ensure that the certified design or the plant complies with the applicable regulations of the design certification rule. The rationale is that the Commission could not, without re-reviewing the merits of each position, impose a change to Tier 1 information or issue a plant-specific order merely because the modification was necessary for compliance with a matter involving

these requirements. Also, the Commission would not have a complete list of regulations for use in evaluating requested changes from the public, applicants, or licensees, thereby degrading the predictability of the licensing process.

By identifying the regulations that are applicable to each design, the Commission has improved the stability and predictability of the licensing process. By approving the design information that describes how these regulations were met, the Commission has minimized the potential for a differing interpretation of the regulations. Finally, the NRC rejected NEI's proposed alternative to applicable regulations in a meeting on April 25, 1994 and in a letter dated July 25, 1994. NEI's proposal to use design information as a surrogate for design-specific (applicable) regulations is not workable for proposed changes, because the design information only represents one way of implementing a regulation. The NRC would need the regulation for the design feature in order to evaluate a proposed change to the design information.

F. Issue resolution for the design certification

The purpose of Section 6 of the proposed rule entitled, "Issue resolution for the design certification" is to identify the issues that are considered resolved, if the Commission adopts a final design certification rule, and therefore, these issues receive issue preclusion within the scope and intent of 10 CFR 52.63(a)(4). Specifically, all nuclear safety issues arising from the Atomic Energy Act that are associated with the information in the NRC staff's FSER or the applicant's DCD are resolved within the meaning of § 52.63(a)(4). All issues arising under the National Environmental Policy Act of 1969 associated with the information in the NRC staff's environmental assessment or

the severe accident design alternatives in the applicant's Technical Support Document are also resolved within the scope and intent of § 52.63(a)(4). The issues that are associated with information that is not included in the DCD, such as proprietary information, do not have issue preclusion within the meaning of 10 CFR 52.63(a)(4).

G. Duration of the design certification

The purpose of Section 7 of the proposed rule entitled, "Duration of the design certification," is in part to specify the time period during which the standard design certification may be referenced by an applicant for a construction permit or COL, pursuant to 10 CFR 52.55. This section of the rule also states that the design certification remains valid for an applicant or licensee that references the design certification until their application is withdrawn or their license expires. Therefore, if an application references this design certification during the 15-year period, then the design certification rule continues in effect until the application is withdrawn or the license issued on that application expires. Also, the design certification continues in effect for the referencing license if the license is renewed. The Commission intends for the proposed rule to remain valid for the life of the plant that references the design certification to achieve the benefits of standardization and licensing stability. This means that rulemaking changes to or plant-specific departures from information in the DCD must be made pursuant to the change process in Section 8 of this proposed rule for the life of the plant.

H. Change process

The purpose of Section 8 of the proposed rule entitled, "Change process" is to set forth the process for requesting rulemaking changes to or plant-specific departures from information in the DCD. The Commission has developed a more restrictive change process than for plants that were licensed pursuant to 10 CFR Part 50, in order to achieve a more stable licensing process for applicants and licensees that reference a design certification rule. The change process in Section 8 is substantively the same as the process proposed in the ANPR². As a result, Section 8(a) provides the process for changing Tier 1 information and Section 8(b) provides the process for changing Tier 2 information. The change process for Tier 1 information uses the change process developed by the Commission in the 10 CFR Part 52 rulemaking for certified design-related information. Therefore, the provisions in Section 8(a) of the proposed rule simply refer to the appropriate sections in 10 CFR 52.63. A description of the Tier 1 information that is controlled by Section 8(a) is provided in the above discussion on contents of the design certification (III.D).

As discussed in Topic #2, the NRC developed a change process for Tier 2 that has the same elements as the Tier 1 change process. Specifically, the Tier 2 change process in Section 8(b) has provisions for generic changes, plant-specific orders, and exemptions similar to those in 10 CFR 52.63, but some of

²This change process has been reorganized for clarity and conformance to the two-tiered rule structure, and to distinguish between generic changes to Tier 1 and 2 information, which are accomplished via rulemaking, and plant-specific departures from Tier 1 and 2 information, which may be accomplished by the process defined in Section 8 of this proposed rule. For brevity, this SEC refers to both aspects as constituting the "change process" for this design certification rule.

the standards for plant-specific orders and exemptions are different. The standards that must be met in order to justify a generic change to either Tier 1 or 2 information are the same. When NEI proposed a two-tiered structure for design certification rules in its letter of August 31, 1990, it also stated that "NRC backfits involving matters described in the first tier would be governed by the provisions of § 52.63, whereas § 50.109 would govern backfitting as respects the second tier." As a result, the NRC staff used the backfit standards in § 50.109 for generic changes to Tier 2 in its proposed design certification rule in SECY-92-287. Subsequently, in a letter dated October 5, 1992, NEI changed its position and agreed with the Commission that the standard for generic changes to Tier 2 should be the same as the Tier 1 standard. This issue is discussed further in SECY-92-287A, dated March 26, 1993. Therefore, Section 8 of this proposed rule uses the same standards for generic changes to both Tier 1 and 2 information.

Although the process in Section 8 for plant-specific orders and exemptions is the same for Tier 1 and 2 information, the standards are different. In order to preserve the benefits of standardization which is one of the important goals of design certification, the Commission proposes in Section 8(b)(3) that plant-specific orders or exemptions from Tier 1 information must consider whether the special circumstances which § 50.12(a)(2) required to be present outweigh any decrease in safety that may result from the reduction in standardization, as required in 10 CFR 52.63(a)(3). The Commission does not propose to adopt this additional consideration for plant-specific orders or exemptions from Tier 2 information, in order to achieve additional flexibility. The Commission believes this is acceptable because the Tier 2 information is not as safety significant as the Tier 1 information. Therefore, Sections 8(b)(3) and (4) of

the proposed rule do not require the additional consideration of the reduction in standardization caused by proposed departures from Tier 2 information.

A generic change to either Tier 1 or 2 information in the DCD is accomplished by rulemaking. Any person seeking to make a generic change to the DCD, including the applicant for this design certification, must submit a petition pursuant to 10 CFR 2.802. This petition must describe how the proposed change meets the standards in 10 CFR 52.63(a)(1) for justifying a generic change to the DCD. Any generic changes to the DCD resulting from the rulemaking will be noticed in the Federal Register. The NRC will update the master DCD in its central files and the copies in the NRC Library and public document room (refer to the discussion in III.D). Under Sections 8(a)(2) and (b)(2) generic changes to Tier 1 and 2, respectively, will be applicable to all plants referencing the design certification. However, if the NRC determines that a generic change is not technically relevant to a particular plant, based on plant-specific changes made pursuant to Section 8, then the generic rulemaking will indicate that the change will not be applicable to that plant. If the proposed change to the DCD also results in a violation of an underlying regulation that is applicable to this design certification, then an exemption to that regulation is also required.

A plant-specific departure from either Tier 1 or 2 information in the DCD does not require rulemaking. Any person requesting a Commission order directing a plant-specific change, including the applicant for this design certification, must submit a petition pursuant to 10 CFR 2.206. This petition must describe how the proposed change meets the standards in 10 CFR 52.63(a)(3) or Section 8(b)(3) for departure from Tier 1 and Tier 2 information, respectively. By contrast an applicant or licensee that references this design certification

rule may request exemptions from Tier 1 or 2 information pursuant to 10 CFR 52.63(b)(1) or Section 8(b)(4) of this rule, respectively. The NRC recognized that there may be special circumstances pertaining to a particular applicant or licensee that would justify an exemption from the DCD. The request must describe how the exemption from Tier 1 or 2 meets the standards in 10 CFR 52.63(b)(1) or Section 8(b)(4) of this proposed rule, respectively. The exemption may be contested in a hearing if the exemption is granted in connection with issuance of a construction permit, operating license, or combined license; it may also be contested in a hearing if the exemption also requires the issuance of a license amendment. If a plant-specific change or exemption from the DCD also results in a violation of the underlying regulation that is applicable to this design certification, then an exemption to that regulation is also required.

In addition to the plant-specific changes described above, an applicant or licensee that references this design certification rule may depart from Tier 2 information, without prior NRC approval pursuant to Section 8(b)(5) of this proposed rule. However, the Commission believes that these changes should open the possibility for challenge in a hearing (refer to discussion on Topic #2). The Commission approved the use of this "§ 50.59-like" change process in its SRMs on SECY-90-377 and SECY-92-287A. The NRC is interested in the public's view on how these changes could be challenged in a hearing (refer to Section IV, questions 4, 5, and 6).

As in 10 CFR 50.59, an applicant or licensee cannot make changes that involve an unreviewed safety question (USQ) or technical specifications, without prior NRC approval. Also, for changes pursuant to Section 8(b)(5), an applicant or licensee cannot make changes to Tier 1 or Tier 2* information without prior

NRC approval. If the proposed change does not involve these factors, then the NRC will allow changes to previously approved information in Tier 2 without prior NRC approval. However, if the change involves an issue that the NRC staff has not previously approved, then NRC approval is required. The process for evaluating proposed tests or experiments not described in Tier 2 will be developed for an operating or combined license that references this design certification (refer to Section IV).

The restriction on changing Tier 1 information is included in the process in Section 8(b)(5) because this information can only be changed pursuant to Section 8(a) of the proposed rule. Whereas, the restriction on changing Tier 2* information resulted from the development of the Tier 1 information in the DCD. A description of the Tier 1 information is provided in the discussion in Section III.D on contents of the design certification. During the development of the Tier 1 information, the applicant for design certification requested that the amount of information in Tier 1 be minimized to provide additional flexibility for the applicant or licensee that references this design certification. Also, many codes, standards, and design processes which were not specified in Tier 1 for meeting the acceptance criteria in ITAAC. The result of these actions is that certain relatively significant information only exists in Tier 2 and the NRC staff did not want this significant information changed without prior NRC approval. The NRC specified this information in its FSER and the design certification applicant has identified this information in its DCD. This information has come to be known as Tier 2* information and it has compensated for industry's desire to minimize the amount of information in Tier 1.

In the ANPR, the NRC referred to the Tier 2* information as pre-identified unreviewed safety questions (USQs) because there was already an established

procedure in 10 CFR 50.59 for FSAR changes that constitute USQs, which require NRC approval. NEI stated in its comments on the ANPR that it was not necessary to create an artificial set of USQs in order to accomplish the NRC's objective of requiring prior approval. Therefore, the proposed rule was changed from the ANPR to simply state that the Tier 2* information can not be changed without prior NRC approval. Also, NEI requested in its comments that the Tier 2* information not be identified in the design certification rule, as was proposed in the ANPR, and that an expiration date be considered for the restriction in the change process for Tier 2* information. NRC agrees that Tier 2* information can be identified in the DCD and Section 8(b)(5) of the proposed rule was changed accordingly. The NRC also reevaluated the duration of the change restriction for Tier 2* information and determined that some of the Tier 2* information can expire when the plant first achieves 100% power while other Tier 2* information must remain in effect throughout the life of the plant that references the DCR. The DCD sets forth an expiration date for some of the Tier 2* information.

As part of this rulemaking, the NRC is seeking public comments on the appropriate regulatory process to use for review of proposed changes to Tier 2* information. Currently, pursuant to 10 CFR 50.59, the NRC approves changes to FSAR information that constitute a USQ or involve technical specifications through the issuance of license amendments. However, if an applicant or licensee requests NRC approval for a proposed change to Tier 2* information, should the NRC review process be similar to that for a USQ? While it is clear that these proposed changes would all involve significant design-related information and that prior review of proposed departures from Tier 2* information is necessary, the NRC has not determined if it is always appropriate

to process the approved changes as either an amendment to the license application or an amendment to the license, with the requisite hearing rights. Therefore, the NRC requests the public's view on the preferred regulatory process for these changes (refer to Section IV).

An applicant or licensee that plans to depart from Tier 2 information, pursuant to Section 8(b)(5), must prepare a safety evaluation which provides the bases for the determination that the proposed change does not involve an unreviewed safety question, a change to Tier 1 or Tier 2* information, or a change to the technical specifications. In order to achieve the Commission's goals for design certification, the evaluation needs to consider all of the matters that were resolved in the DCD, including the generic issues discussed in Chapter 20 of the FSER. The benefits of the early resolution of safety issues would be lost if changes were made to the DCD that violated these resolutions without NRC approval. The evaluation of the resolved issues needs to consider the proposed change over the full range of power operation from startup to shutdown, including issues resolved under the heading of shutdown risk, as it relates to anticipated operational occurrences, transients, and design basis accidents. The evaluation should consider the tables in Sections 14.3 and 19.8 of the DCD to ensure that the proposed change does not impact Tier 1. These tables contain various cross-references from the plant safety analyses in Tier 2 to the important parameters that were included in Tier 1. Although many issues and analyses could have been cross-referenced, the listings in these tables were developed only for key plant safety analyses for the design. GE provided more detailed cross-references to Tier 1 for these analyses in a letter dated March 31, 1994, and ABB-C provided more detailed cross-references in a letter dated June 10, 1994. The NRC does not endorse NSA-125, "Guidelines for 10 CFR

50.59 Safety Evaluations," for performing the safety evaluations required by Section 8(b)(15) of the proposed rule. However, the NRC will work with industry, if it is desired, to develop an appropriate guidance document for implementing Section 8 after the final rule is issued.

During the review of its DCD, GE requested that the determination of whether a proposed departure from Tier 2 information that involves severe accident issues constitutes a USQ use criteria that are different from the criteria for USQ determinations proposed in the ANPR [10 CFR 50.59(a)(2)]. GE argued that not all increases in the probability or consequences of severe accidents are significant from a safety standpoint. Minor increases in the probability of some accident scenarios will not affect the overall core damage frequency or the conclusions of the severe accident evaluations. Therefore, GE proposed that changes to Tier 2 information that result in insignificant increases in the probability or consequences of severe accidents not constitute a USQ.

The NRC believes that it is important to preserve and maintain the resolution of severe accident issues just like all other safety issues that were resolved during the design certification review (refer to SRM on SECY-90-377). However, because of the increased uncertainty in severe accident issue resolutions, the NRC has proposed, in Section 8(b)(5), separate criteria for determining whether a departure from information associated with severe accident issues constitutes a USQ. The new criteria in Section 8(b)(5)(iii) will only apply to Tier 2 information that is associated with the severe accident issues discussed in the section of the DCD identified in the rule. The criteria for USQ determinations in Section 8(b)(5)(ii), which are the same as those proposed in the ANPR, will apply to other Tier 2 information. If the proposed departure

from Tier 2 information involves the resolution of other safety issues in addition to the severe accident issues, then the USQ determination should be based upon the criteria in Section 8(b)(5)(ii). The NRC is interested in the public's view on whether the Tier 2 information involving resolutions of severe accident issues should be treated differently for USQ determinations than all other safety issues? If so, are the proposed criteria in Section 8(b)(5)(iii) sufficient to determine if a proposed departure from information associated with severe accident issues constitutes a USQ? (Refer to Section IV, question .)

The NRC is also proposing two additional provisions to the change process that were not in the ANPR. The first is Section 8(b)(5)(iv), which provides that changes made pursuant to Section 8(b)(5) do not also require an exemption from the design certification rule. Because the Tier 2 information is incorporated by reference into the design certification, a departure from Tier 2 pursuant to Section 8(b)(5) would also require an exemption from the design certification rule absent this proposed provision. The second provision is Section 8(c), which makes it clear that proposed changes to requirements in this design certification rule that are neither Tier 1 nor Tier 2 must be done by exemption pursuant to 10 CFR 50.12. Such requirements include the recordkeeping and reporting requirements in Section 9 of this proposed rule.

I. Records and Reports

The purpose of Section 9 of this proposed rule entitled, "Records and Reports" is set forth the requirements for maintaining records of DCD changes and submitting reports to the NRC. This section is similar to the requirements for records and reports in 10 CFR Part 50 and § 52.63(b)(2), with the following

differences. Section 9(a)(1) requires an applicant for design certification to maintain an up-to-date copy of the DCD that includes all generic changes to Tier 1 and 2 information that are made by rulemaking. This will ensure that the design certification applicant provides up-to-date versions of the DCD to prospective applicants that want to reference this design certification or to other interested parties who want copies of the DCD. Section 9(a)(2) requires an applicant or licensee that references this design certification to maintain an up-to-date plant-specific version of the DCD that includes both generic changes to the DCD, as well as plant-specific departures from the DCD. This ensures that the plant records include an accurate DCD reflecting information specific to the plant as well as changes to the DCD.

The proposed rule also establishes reporting requirements in Section 9(b) for applicants or licensees that reference this design certification rule. The requirements in Section 9(b) are similar to the reporting requirements in 10 CFR Part 50, except that they include reporting of changes to or departures from the plant-specific DCD. In addition, the reporting requirements in Section 9(b) vary according to whether the changes are made as part of an application, during plant construction, or during operation. Also, the reporting frequency of summary reports of departures from and periodic updates to the DCD increases during plant construction. If an applicant that references this design certification rule decides to adopt departures from the DCD that were developed, but not approved pursuant to Section 8 of this proposed rule, prior to its application (i.e., first of a kind engineering), then the proposed departures from the DCD must be submitted with the initial application for a construction permit or combined license.

For currently operating plants, a licensee is required to maintain records of the basis for any design change made to the plant pursuant to 10 CFR 50.59. Further, a licensee is required to provide a summary of these changes to the NRC on at least a bi-annual basis, along with updates to the final safety analysis report pursuant to 10 CFR 50.71. The proposed rule allows departures from the DCD during the periods of application, construction, and operation of the plant. Therefore, the proposed rule requires timely submittal of summary reports of departures from, as well as, updates to the DCD during each of these intervals, consistent with the Commission's guidance on reporting frequency in its SRM on SECY-90-377.

NEI proposed reporting of design changes at a 6-month interval, in its comments on the ANPR, to "avoid unnecessarily diverting owner/operator resources to meet excessive reporting requirements." The NRC does not agree with the NEI proposal for semi-annual reporting of design changes because it does not provide for sufficiently timely notification of design changes during plant construction. Therefore, the Commission retained the requirement for quarterly reporting of changes in the proposed rule. However, the NRC modified the provisions in the proposed rule to relax the reporting requirements before issuance of a construction permit or combined license. During this interval, summary reports of changes should be submitted to the NRC as part of the amendments to the construction permit or combined license application. Also, the NRC relaxed the provisions in Section 9(b) so that during operation of a plant, the reporting requirements are the same as for currently operating plants (biannual).

The NRC Commission believes that quarterly reporting of design changes during the period of construction are necessary to closely monitor the status

and progress of the construction of the plant. As required by 10 CFR 52.99, the NRC must find that the ITAAC have been successfully met. The ITAAC verify that the as-built facility conforms with the approved design and emphasize design reconciliation and design verification of the as-built plant. To make its finding, the NRC must tailor its inspection program to monitor the plant construction and adjust its program to accommodate changes. Quarterly reporting of design changes will facilitate these adjustments in a timely manner and aids in a common understanding of the plant as the changes are being made. This is particularly important in times where the number of design changes could be significant, such as during the procurement of components and equipment, detailed design of the plant at the start of construction, and during pre-operational testing.

Section 9(c) of the proposed rule requires that records are kept for the lifetime of a facility, as in 10 CFR Part 50 and § 52.63(b)(2).

J. Applicability of a DCR in 10 CFR Part 50 licensing proceedings

Several provisions in 10 CFR Part 52, Subpart B, suggest that design certification rules (DCRs) may be referenced not only in combined license proceedings under 10 CFR Part 52, Subpart C, but also in licensing proceedings under 10 CFR Part 50. Section 52.63(c) states:

The Commission will require, prior to granting a construction permit, combined license, or operating license which references a standard design certification, that information normally contained in certain procurement specifications and

construction and installation specifications be completed and available for audit if such information is necessary for the Commission to make its safety determination, including the determination that the application is consistent with the certified design. (Emphasis supplied.)

See also §§ 52.41, 52.55(b), 52.55(c), 52.63(a)(4), 52.63(b)(1). However, these provisions in 10 CFR Part 52, Subpart B, are inconsistent in identifying the *type* of Part 50 proceeding in which design certification rules may be referenced. For example, although § 52.63(c) (quoted above) and § 52.55(c) explicitly provide for referencing of design certification rules in 10 CFR Part 50 *construction permit* proceedings, §§ 52.55(b), 52.63(a)(4) and 52.63(b)(1) refer only to *operating license* proceedings. Section 52.63(a)(4) is illustrative:

Except as provided for in 10 CFR 2.758, in making the findings required for issuance of a combined license or operating license, or for any hearing under § 52.103, the Commission shall treat as resolved those matters resolved in connection with the issuance or renewal of a design certification. (Emphasis supplied.)

Therefore, some might question whether the Commission intended construction permits applicants under 10 CFR Part 50 to have the option of referencing design certification rules. However, the Commission has not identified any regulatory or policy reasons for precluding a construction permit

applicant from referencing a design certification rule while allowing an operating license applicant to do so. Thus, the Commission believes that 10 CFR Part 52 provides the discretion to authorize a construction permit applicant under 10 CFR Part 50 to reference a design certification rule.

Assuming that the Commission has such discretion, there are a number of issues that present themselves. Should the Commission exercise its discretion to allow construction permit applicants to reference this design certification rule? Should the Commission require that if a design certification rule is to be relied upon in Part 50 licensing proceedings, it must be referenced in both the construction permit and operating license applications? Would it make sense to allow an operating license applicant to reference a design certification if the underlying construction permit did not reference the design certification? The Commission recognizes that consideration of these issues depends in part upon the legal significance of a design certification in the 10 CFR Part 50 licensing proceeding, as well as its significance for the permittee or licensee once the construction permit or operating license is granted. In particular, 10 CFR Part 52, Subpart B, does not say what the legal effect is (if any) of ITAAC in a Part 50 operating license proceeding in which the underlying construction permit references a design certification.

In view of the status of ITAAC as Tier 1 information, how would a construction permit applicant referencing a design certification rule avoid referencing the ITAAC? What would be the consequences for the construction permit applicant of referencing ITAAC? If the underlying construction permit referenced ITAAC, then what (if any) would be the scope and nature of "issue preclusion" at the operating license stage, in terms of Staff/Commission review and approval of the operating license application, as well as issues which are

precluded from consideration under 10 CFR 2.758? The Commission seeks the public's views on the referencing of design certification rules in 10 CFR Part 50 applications (refer to Section IV, question 8).

IV. SPECIFIC REQUESTS FOR COMMENTS

In addition to the general invitation to submit comments on the proposed rule, the DCD, and the environmental assessment, the NRC also invites specific comments on the following questions:

1. Should the requirements of 10 CFR 52.63(c) be added to a new 10 CFR 52.79(e)? (Refer to discussion in III.A.)
2. Are there other words or phrases that should be defined in Section 2 of the proposed rule? (Refer to discussion in III.B.)
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 III.D.)
4. 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.)

5. 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 III.H.)

6. 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 III.H.)

7. 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 III.H.)

8(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?

8(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?

(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 this design certification, or may resolution of these issues be deferred without adverse consequence (e.g., without foreclosing alternatives for future resolution).

V. COMMENTS AND HEARINGS IN THE DESIGN CERTIFICATION RULEMAKING

A. Opportunity to Submit Written and Electronic Comments

Any person may submit written comments on the proposed design certification rule to the Commission for its consideration.³ Commenters have 120 days from the publication of this notice to file written comments on the proposed design certification rule.

Submission of Comments in Electronic Format:

Commenters are encouraged to submit, in addition to the original paper copy, a copy of the comment letter in electronic format on a DOS-formatted (IBM compatible) 3.5 or 5.25 inch computer diskette. Text files should be provided in WordPerfect format or unformatted ASCII code. The format and version should be identified on the diskette's external label.

Comments may also be submitted electronically, in either ASCII text or Wordperfect format (version 5.1 or later), by calling the NRC Electronic Bulletin Board on FedWorld. The bulletin board may be accessed using a personal computer, a modem, and one of the commonly available communications software packages, or directly via Internet.

If using a personal computer and modem, the NRC subsystem on FedWorld can be accessed directly by dialing the toll free number: 1-800-303-9672. Communication software parameters should be set as follows: parity to none, data

³An opportunity for public comment is required by Section 553 of the Administrative Procedures Act and 10 CFR 52.51(b).

bits to 8, and stop bits to 1 (N,8,1). Using ANSI terminal emulation, the NRC rules subsystem can then be accessed by selecting the "Rules" option from the "NRC Main Menu." For further information about options available for NRC at FedWorld consult the "Help/Information Center" from the "NRC Main Menu." Users will find the "FedWorld Online User's Guides" particularly helpful. Many NRC subsystems and databases also have a "Help/Information Center" option that is tailored to the particular subsystem.

The NRC subsystem on FedWorld can also be accessed by a direct dial phone number for the main FedWorld BBS: 703-321-8020; Telnet via Internet: fedworld.gov (192.239.92.3); File Transfer Protocol (FTP) via Internet: ftp.fedworld.gov (192.239.92.205); and World Wide Web using: <http://www.fedworld.gov> (this is the Uniform Resource Locator (URL)).

If using a method other than the toll free number to contact FedWorld, then the NRC subsystem will be accessed from the main FedWorld menu by selecting the "U.S. Nuclear Regulatory Commission" option from FedWorld's "Subsystems/Databases" menu or by entering the command `/go nrc` at a FedWorld command line. If NRC access is obtained through FedWorld's "Subsystems/Databases" menu, then return to FedWorld is accomplished by selecting the "Return to FedWorld" option from the "NRC Main Menu." However, if NRC access at FedWorld is accomplished by using NRC's toll-free number, access to all NRC systems is available, but there will be no access to the main FedWorld system. For more information on NRC bulletin boards call Mr. Arthur Davis, Systems Integration and Development Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 415-5780; e-mail AXD3@nrc.gov.

Public meeting:

The NRC staff plans to conduct a public meeting on this proposed rule approximately 60 days following the date of its publication in the Federal Register. The specific date, time, and location of the meeting will be published in a future Federal Register notice. The purpose of the public meeting will be to discuss this proposed rule and respond to questions on the meaning and intent of any provisions of this proposed rule. It is hoped that this meeting will be helpful to persons who intend to submit written comments on the proposed rule. An official transcript of the proceedings of the public meeting will be prepared.

B. Opportunity to Request Hearing

Any person may request an *informal* hearing on one or more specific matters with respect to the proposed design certification rule.⁴ An informal hearing provides the admitted party with an opportunity to provide written and oral presentations on those matters to an Atomic Safety and Licensing Board and to request that the licensing board question the applicant on those matters. The conduct of an informal hearing is discussed in more detail in Section C below. Under certain circumstances, a party in an informal hearing may request that the Commission hold a formal hearing on specific and substantial factual disputes necessary to resolution of the matters for which the party was granted an informal hearing (see Section C.11 below).

⁴An opportunity for a hearing is provided by 10 CFR 52.51(b).

A person may request an informal hearing even though that person has not submitted separate written comments on the design certification rule (i.e., is not a commenter). Requests for an informal hearing must be received by the Commission no later than 120 days from the publication of this notice, and a copy of the request must be sent via overnight mail to the design certification applicant at the following address: Mr. Joseph F. Quirk, Mail Code 782, GE Nuclear Energy, 175 Curtner Avenue, San Jose, CA 95125. The information which a person requesting a hearing must provide in the hearing request, as well as the procedures and standards to be used by the Commission in its determination of the request, are discussed in Sections C.1 through C.4 below.

A person who wishes to review any proprietary information submitted by the design certification applicant *must request an informal hearing*. The hearing request should state that an informal hearing is sought in order to obtain access to proprietary information. The person should then seek access to the information directly from the design certification applicant as discussed in Section F. below.

The Commission is also providing an opportunity for interested state, county, and city/municipal and other local Governments, as well as Native American tribal governments to participate as "interested governments" in any informal hearings which the Commission authorizes, similar to their participation as "interested governments" in Subpart G hearings under 10 CFR 2.715. State, county, city/municipal, local and tribal Governments wishing to participate as an "interested government" in any design certification rulemaking hearings which may be held must file their request to participate no later than 120 days from the publication of this notice.

C. Hearing Process

1. Filings and Computation of Times

All notices, papers, or other filings discussed in this section must be filed by express mail.⁵ The time periods specified in this section have been established based upon such a filing. The express mail filing requirement shall be considered in establishing other filing deadlines.

In computing any period of time, the day of the act, event or default after which the designated period of time begins to run is not included. The last day of the period so computed is included, unless it is a Saturday, Sunday, or legal holiday at the place where the action or event is to occur, in which case the period runs until the next day which is neither a Saturday, Sunday, nor holiday.

2. Content of Hearing Request

The Commission will grant a request for an informal hearing only if the hearing request satisfies each of the following two requirements. First, the hearing request must include the written presentations which the requestor wishes to be included in the record of the hearing. The written presentations must:

(i) Identify the specific portion of the proposed design certification rule or supporting bases which are challenged,

⁵Filings discussed in this section may also be served upon the Commission in electronic form in lieu of express mail. However, parties must serve copies of their filings on other parties by express mail, unless the receiving party agrees to filing in electronic form. Filings must be transmitted no later than the last day of the time period specified for filing and must be in accordance with the requirements specified in the Summary.

(ii) Describe the reasons why the proposed rule or supporting bases are incorrect or insufficient, and

(iii) Identify the references or sources upon which the person requesting the hearing relies.

If the requestor has submitted written comments in the public comment period addressing these three factors for the specific issue for which the requestor seeks a hearing, it will be sufficient for the requestor to identify the portions of the written comments which the requestor intends to submit as a written presentation. Also, the hearing request must demonstrate that the requestor (or other persons identified in the hearing request who will represent, assist, or speak on behalf of the requestor at the hearing) has appropriate knowledge and qualifications to enable the requestor to contribute significantly to the development of the hearing record on the specific matters at issue. The Commission does not intend that the requestor meet a judicial "expert witness" standard in order to meet the second criterion. Nonetheless, given the substantial commitment of time and resources associated with any hearing, the Commission believes it to be a reasonable prerequisite that the hearing requestor demonstrate that he/she (or his/her assistant) has:

(i) Substantial familiarity with the publicly available docketed information relevant to the issue for which a hearing is requested;

(ii) The requisite technical capability to understand the factual matters and develop a record on the issue for which a hearing is requested, and

(iii) An understanding of the NRC's hearing procedures in 10 CFR Part 2.⁶

⁶Requestors will satisfy this requirement by stating that they possess and have read a copy of 10 CFR Part 2, Subparts A, G, and L.

3. Request to Hold Hearing Outside of Washington, DC.

Any hearing(s) which the Commission may authorize ordinarily will be conducted in the Washington, DC metropolitan area. However, the Commission at its discretion may schedule hearings outside the Washington, DC metropolitan area in response to requests submitted by a person requesting a hearing that all or part of the hearing be held elsewhere. These requests must be submitted in conjunction with the request for hearing, and must specifically explain the special circumstances for holding a hearing outside the Washington, DC metropolitan area.

4. Responses to Hearing Request

The applicant may file a response to any hearing request within 15 days of the date of the hearing request. The NRC staff will not provide a response to the hearing request unless requested to do so by the Commission but may assist the Commission in its ruling on the request.

5. Commission Determination of Hearing Request

The Commission intends to rule on a hearing request within 20 days of the close of the period for requesting a hearing. The Commission's determination will be based upon the materials accompanying the hearing request and the applicant's response (and the NRC staff's response, if requested by the Commission). The hearing request shall be granted if:

(i) The request is accompanied by a written presentation containing the information required by Section C.1. above; and

(ii) The requestor has the appropriate knowledge and qualifications to enable the requestor to contribute significantly to the development of the hearing record on the matters sought to be controverted.

The Commission may consult with the NRC staff before its determination of a hearing request. A written decision either granting or denying the hearing request will be published by the Commission.

If a hearing request is granted in whole or in part, the Commission's decision will delineate the controverted matter that will be the subject of the hearing and whether any issues and/or parties are to be consolidated (see Section C.7. below). The Commission's decision granting the hearing will direct the establishment of a licensing board to preside over the informal hearing. Finally, the Commission's decision will specify:

(i) The date by which any requests for discovery must be filed with the licensing board (normally 20 days after the date of the Commission's decision), and

(ii) The date by which any objections to discovery must be filed (see Section C.9. below).

The Commission's decision will be sent to each admitted party by overnight mail. Separate hearings may be granted for each controverted matter or set of consolidated matters. Thus, if there are three different controverted matters, the Commission may establish three separate hearings. In this fashion, closing of the hearing record on a controverted matter and its referral to the Commission for resolution need not await completion of the hearing on the other controverted matters. Finally, the Commission's decision will rule on any requests for hearings outside of the Washington, DC metropolitan area (see Section C.2 above).

6. Authority of the Licensing Board

If the Commission authorizes an informal hearing on a controverted matter, the licensing board will function as a "limited magistrate" in that hearing with the authority and responsibility for assuring that a sufficient record is developed on those controverted matters which the Commission has determined are appropriate for consideration in that hearing. The licensing board shall have the following specific responsibilities and authority:

(1) Schedule and expeditiously conduct the informal hearing for each admitted controverted matter, consistent with the rights of all the parties,

(2) Review all discovery requests against the criteria established by the Commission, and refer all appropriate requests to the Commission with a decision explaining the licensing board's action,

(3) Preside over and resolve any issues regarding the scheduling and conduct of any discovery authorized by the Commission,

(4) Order such further consolidation of parties and issues as the licensing board determines is necessary or desirable;

(5) Orally examine persons making oral presentations in the informal hearing, based in part upon the licensing board's review of the parties' proposed oral questions to be asked of persons making oral presentations,

(6) Request that the NRC Staff:

(i) Answer licensing board questions about the SER or the proposed rule,

(ii) Provide additional information or documentation with respect to the design certification, and

(iii) Provide other assistance as the licensing board may request.

Licensing board requests for NRC staff assistance should be framed such that the

NRC staff does not assume a role as an adversary party in the informal hearing (see Section C.8 below),

(7) Review all requests for additional hearing procedures and refer all appropriate requests to the Commission with a decision explaining the licensing board's action,

(8) Certify the hearing record to the Commission, based upon the licensing board's determination that the hearing record contains sufficient information for the Commission to make a reasoned determination on the controverted matter.

(9) At its discretion, include with its certification the licensing board's proposed findings on factual disputes and/or recommendations on the controverted matters for consideration by the Commission; and

(10) Include with its certification any concerns identified by the licensing board in the course of the hearing which, although neither raised by the parties nor necessary to resolution of the controverted hearing matters, are significant enough in the licensing board's view to warrant attention by the Commission.

Licensing board determinations with respect to referral of requests to the Commission, as well as licensing board determinations of parties' motions, are not appealable to the Commission as an interlocutory matter. Instead, any disagreements with the licensing board's determinations, and a specific discussion of how the hearing record is deficient with respect to the contested issue must be set forth in the parties' proposed findings of fact which are submitted directly to the Commission (see Section C.13 below).

As suggested by Item (10) above, the licensing board shall not have any "sua sponte" authority analogous to 10 CFR 2.760a. The Commission believes that in the absence of a request for an informal hearing on a matter, the Commission should resolve issues with respect to the design certification rule in the same manner as other agency-identified rulemaking issues, viz., through NRC Staff consideration of the issue followed by the Commission's review and its final resolution of the matter. However, when it certifies the completed hearing record to the Commission (see Section C.12. below), the licensing board should identify to the Commission any concerns identified during the hearing that are significant enough to warrant Commission consideration but that are unnecessary or irrelevant to the resolution of the controverted hearing matter.

The licensing board shall close the hearing and certify the record to the Commission only after it determines that the record on the controverted matter is sufficiently complete for the Commission to make a reasoned determination with respect to that matter. However, the licensing board shall not have any responsibility or authority to resolve and decide controverted matters in either an informal or a formal hearing. Rather, the Commission retains its traditional authority in rulemaking proceedings to evaluate and resolve all rulemaking issues identified in public comments on a proposed rule. Therefore, the Commission will resolve any controverted matters that are the subject of a hearing in this design certification rulemaking. However, the licensing board may submit for the Commission's consideration proposed findings on factual disputes, and/or recommendations on underlying matters of controversy.

7. Consolidation of Parties and Issues; Joint Hearings on Related Issues

If two or more persons seek an informal hearing on the same or similar matters, the Commission may, in its discretion, grant an informal hearing and consolidate the matters into a single issue (as defined by the Commission). The Commission may also, in its discretion, require that the parties be consolidated analogous to the consolidation permitted under 10 CFR 2.715a. If the Commission consolidates two or more issues into a single consolidated issue but does not consolidate parties, each admitted person will be deemed a separate party with an individual right to:

- (i) Submit separate written presentations,
- (ii) Submit separate sets of proposed oral questions to be asked by the licensing board (see Section C.10 below),
- (iii) Make separate oral presentation, and
- (iv) Submit and separately respond to motions.

If the Commission also requires that parties be consolidated, the consolidated parties must participate jointly, including deciding upon written and oral presentations, submitting a single set of written questions, submitting motions supported by each of the consolidated parties, and responding to motions filed by other parties.

During the informal hearing, the licensing board may decide that further consolidation of issues or parties would simplify the overall conduct of informal hearings or materially reduce the time or resources devoted to the hearings. In these instances, the licensing board may direct such consolidation. The licensing board shall set forth the issues and/or parties to be consolidated and the reasons for such consolidation in a written order.

8. Status of the Design Certification Applicant, the NRC Staff and Requesting Party

The design certification applicant shall be a party in the informal hearing, with the right to submit written and oral presentations, propose questions to be asked by the licensing board of oral presenters, and file and submit appropriate motions.

The NRC Staff shall *not* be a party in the informal hearing but shall be available in the informal hearing to answer licensing board questions about the FSER or the proposed rule, provide additional information or documentation with respect to the design certification, and provide other assistance that the licensing board may request without the NRC staff assuming the role of a party in the informal hearing.

A party whose hearing requests have been granted with respect to a particular controverted matter shall not participate with respect to any controverted matter on which the party was not granted a hearing. For example, if Person 1 has been authorized as a party on Issue A and Person 2 has been authorized as a party on Issue B, then Person 1 may participate only in the informal hearing on Issue A, and may *not* participate in the informal hearing on Issue B. Conversely, Person 2 may participate only in the informal hearing on Issue B, and may *not* participate in the informal hearing on Issue A.

9. Requests for Discovery

Any party may request the opportunity to conduct discovery against another party before the oral phase of the informal hearing. The request for discovery must:

(i) Identify the type of discovery permitted under 10 CFR §§ 2.740, 2.740a, 2.740a(b), 2.741, and 2.742 which the party seeks to use;

(ii) Identify the subject matter or nature of the information sought to be obtained by discovery; and

(iii) Explain *with particularity* the relevance of the information sought to the controverted matter which is the subject of the hearing and why this information is indispensable to the presentation of the party's position on the controverted matter. The request shall be filed with the licensing board, with copies of the request to be filed with the party against which discovery is sought, and the NRC staff.

The requests must be received no later than the deadline specified by the Commission in its decision granting a party's hearing request (see Section C.4. above). A party against whom discovery is sought may file a response objecting to part or all of the request. Such a response must explain *with particularity* why the discovery request should not be granted.

The licensing board shall review all discovery requests and refer to the Commission those requests that it believes should be granted within 7 days after the date for receiving a party's objections to a discovery request. The licensing board shall issue a written decision explaining its basis for either referring the request to the Commission or declining to refer it. The written decision shall accompany the discovery requests which are referred by the licensing board to the Commission.

The Commission will determine whether to grant any discovery requests forwarded to it based upon the licensing board's decision, together with the request and the design certification applicant's response (and any NRC Staff response requested by the licensing board). Discovery will be at the discretion

of the Commission. In this regard, the Commission notes that two docket files have been established by the NRC staff for the U.S. ABWR design certification review. The first docket file (STN 50-605) was established on February 22, 1988, and the second docket file (52-001) became effective on March 13, 1992. The NRC staff has placed information and documents received from the design certification applicant in these docket files. This information includes the Standard Safety Analysis Report, through Amendment 35, and the Technical Support Document for the U.S. ABWR, Revision 1. Furthermore, the docket files contain NRC staff communications and documents, such as written questions and comments provided to the design certification applicant, and summaries of meetings held between the NRC staff and the design certification applicant. The NRC Staff's bases for approving the U.S. ABWR design are set forth in the FSER (NUREG-1503), dated July 1994. The Commission also notes that each admitted party has already disclosed a substantial amount of information in its hearing request, relating both to bases for the party's position with respect to the controverted matter as well as information on the qualifications of the party (or its representatives and witnesses in the hearing).

As discussed above, much of the information documenting the NRC staff's review and approval of the design certification application has been routinely placed in the docket file. Furthermore, as discussed in Section C.8., the NRC staff is not a party in an informal hearing. Therefore, the Commission has decided that in an informal hearing, the parties should *not* be afforded discovery against the NRC staff.

10. Conduct of Informal Hearing

If the Commission authorizes discovery, the licensing board shall establish a schedule for the conduct and completion of discovery. Normally, the licensing board should not permit more than one round of discovery. The Commission will not entertain any interlocutory appeals from licensing board orders resolving any discovery disputes or otherwise complaining of the scheduling of discovery.

Following the completion of discovery, the licensing board should issue an order setting forth the date of commencement of the oral phase of each informal hearing, and the date (no less than thirty (30) days before the commencement of the oral phase of the hearing) by which parties must submit:

- (i) The identities and curriculum vitae of those persons providing oral presentations;

- (ii) The outlines of the oral presentations; and

- (iii) Any questions which a party would like the licensing board to ask.

The licensing board may schedule the oral phases of two or more informal hearings to be held during the same session.

The licensing board shall publish a notice in the Federal Register announcing the commencement of the oral phase of the informal hearing(s). The notice shall set forth the place and time of the oral hearing session, the subject matter(s) of the informal hearing(s), a brief description of the informal hearing procedures, and a statement indicating that the public may observe the informal hearing.

Based upon the parties' outlines of the oral presentation and proposed question the licensing board should determine whether it has specific questions of the NRC Staff with respect to the staff's review of the design certification application. These questions should be submitted in writing to the NRC no less

than 20 days before the commencement of the oral phase of the hearing and must specify the date by which the NRC staff shall provide its written answers to the licensing board. The licensing board shall send copies of the request by overnight mail to all parties. The NRC staff shall file its written answers with the licensing board and the parties.

During the oral phase of the hearing, the licensing board shall receive into evidence the written presentations of the parties and permit each party (or the representatives identified in their hearing request) to make oral presentations addressing the controverted matter. Normally, the party raising the controverted matter should make their presentations, followed by the presentations of the design certification applicant. The licensing board may question the persons making oral presentations, using its own questions as well as those submitted to the licensing board by the other parties. Based upon the parties' oral presentations and/or responses to licensing board questions, the licensing board may also orally question the NRC Staff.

11. Additional Hearing Procedures and Formal Hearings

After the parties have made their oral presentations and the licensing board has concluded its questioning of the presenters (and, as applicable, the NRC Staff), the licensing board should declare that oral phase of an informal hearing on a controverted matter (or consolidated set of controverted matters) is completed.)

No later than 10 days after the licensing board has declared that the oral phase of the informal hearing has been completed, parties may file with the licensing board (with copies to the applicant and the NRC staff) a request that some or all of the procedures described in 10 CFR Part 2, Subpart G (e.g.,

direct and cross-examination by the parties) be utilized. The request shall:

(i) Identify the specific hearing procedures which the party seeks, or state that a formal hearing is requested;

(ii) Identify the specific *factual* issues for which the additional procedures would be utilized,

(iii) Explain why resolution of these factual disputes are necessary to the Commission's decision on the controverted issue;

(iv) Explain, with specific citations to the hearing record, why the record is insufficient on the controverted matter, and

(v) Identify the nature of the evidence that would be developed utilizing the additional procedures requested.

The design certification applicant may file a response to these requests no later than seven days after the applicant's receipt of a request for additional procedures. The NRC staff will not provide a response unless specifically requested to do so by the licensing board.

The licensing board will review all requests for additional hearing procedures or a formal hearing and refer those that it believes should be granted to the Commission for its determination. The licensing board shall issue a written decision explaining its determination whether to forward the request to the Commission no later than 7 days after receipt of any applicant response to the request. The decision will provide the basis for either forwarding the request to the Commission or declining to forward it. In the absence of any requests for hearing procedures or if the licensing board concludes that none of the requests should be referred to the Commission, the licensing board should declare that the hearing record is closed (see Section C.12 below).

The Commission will determine whether to grant any requests for additional procedures or a formal hearing that are forwarded by the licensing board. The Commission's determination shall be based upon the licensing board's decision along with the request and the design certification applicant's response. If the Commission directs that a formal hearing be held on a controverted factual matter, the NRC staff shall be a party in the formal hearing. After either the additional hearing procedures authorized by the Commission are completed or the formal hearing is concluded on the factual dispute, the licensing board should declare the hearing record closed (see Section C.12 below).

12. Licensing Board's Certification of Hearing Record to the Commission

After the oral phase of a hearing is completed and either:

(i) There are no requests for additional hearing procedures or a formal hearing, or

(ii) The licensing board concludes that none of the requests should be referred to the Commission, then the licensing board should declare that the hearing record is closed.

If the Commission directs that additional hearing procedures should be utilized or a formal hearing be held on specific factual disputes, the licensing board should declare the hearing record closed after completion of the additional hearing procedures or the formal hearing. Within 30 days of the closing of the hearing record the licensing board should certify the hearing

record to the Commission on each controverted matter (or consolidated set of controverted matters).⁷

The licensing board's certification for each controverted matter (or consolidated set of controverted matters) shall contain:

(i) The hearing record, including a transcript of the oral phase of the hearing (and any pre-hearing conferences) and copies of all filings by the parties and the licensing board,

(ii) A list of all documentary evidence admitted by the licensing board, including the written presentations of the parties,

(iii) Copies of the documentary evidence admitted by the licensing board,
(iv) a list of all witnesses who provided oral testimony,

(v) The NRC staff's written answers to licensing board requests, and

(vi) A licensing board statement that the hearing record contains sufficient information for the Commission to make a reasoned determination on the controverted matter.

At its discretion, the licensing board may also submit for the Commission's consideration proposed findings on factual disputes, and/or recommendations on underlying matters of controversy. Finally, as discussed in Section C.6 above, the licensing board should identify any issues not raised by the parties or otherwise are not relevant to the controverted matters in the hearing, that the licensing board nonetheless believes are significant enough to warrant attention by the Commission.

13. Parties' Proposed Findings of Fact and Conclusions

⁷An informal hearing is deemed to be completed when the period for requesting additional procedures or a formal hearing expires and no request is received.

The applicant must file directly with the Commission proposed findings of fact and conclusions for each controverted hearing matter (or consolidated set of controverted matters) within 30 days following the close of the hearing record on that matter in the form of a proposed final rule and statement of considerations with respect to the controverted hearing issues.

Other parties are encouraged, but not required, to file with the Commission proposed findings of fact and conclusions limited to those issues which a party was afforded a hearing by the Commission (i.e., a party may *not* file proposed findings of fact and conclusions on issues which it was *not* admitted). Any findings that a party wishes the Commission to consider must be received by the Commission no later than 30 days after the licensing board closes the hearing record on that issue. Although parties are not required to file proposed findings and conclusions, a party who does not file a finding may not, upon appeal, claim or otherwise argue that the Commission either misunderstood the party's position, or failed to address a specific piece of evidence or issue.

D. Resolution of Issues for the Final Rulemaking

1. Absence of Qualifying Hearing Request.

If the Commission does not receive any request for hearing within the 120-day period for submitting a request, or does not grant any of the requests (see Section IV.B.1. above), the Commission will determine whether the proposed design certification rule meets the applicable standards and requirements of the Atomic Energy Act of 1954; as amended (AEA), the National Environmental Policy Act of 1969; as amended (NEPA), and the Commission's rules and regulations. The

Commission's determination will be based upon the rulemaking record, which includes: the application for design certification, including the SSAR and DCD; the applicant's responses to the NRC staff's requests for additional information; the NRC staff's FSER and any supplements thereto; the report on the application by the ACRS; the applicant's Technical Support Document addressing consideration of severe accident mitigation design alternatives (SAMDAs) for purposes of NEPA; the NRC staff's EA and draft FONSI; the proposed rule, and the public comments received on the proposed rule. If the Commission makes an affirmative finding, it will issue a standard design certification in the form of a rule by adding a new appendix to 10 CFR Part 52, and publish the design certification rule and a statement of considerations in the Federal Register.

2. Commission Resolution of Issues Where a Hearing is Granted.

All matters related to the proposed design certification rule, including those matters for which the Commission authorizes a hearing (see Sections B. and C. above), will be resolved by the Commission after the licensing board has closed the hearing record and certified it to the Commission. The Commission will determine whether the proposed design certification rule meets the applicable standards and requirements of the AEA, NEPA, and the Commission's rules and regulations. The Commission's determination will be based upon the rulemaking record as described in Section D.1 above, with the addition of the hearing record for controverted matters. If the Commission makes an affirmative finding, the Commission will issue a final design certification rule as described in Section D.1.

E. Access to Proprietary Information in Rulemaking

Parties who are granted a hearing may request access to proprietary information. Furthermore, as discussed in Section B. above, persons seeking access to proprietary information in order to submit written comments on the proposed design certification rule must request an informal hearing. In either case, the procedures for obtaining access to proprietary information are the same and are described below.

Parties must first request access to proprietary information regarding the proposed design certification from the applicant. The request shall state *with particularity*:

- (i) The nature of the proprietary information sought,
- (ii) The reason why the nonproprietary information currently available to the public in the NRC's Public Document Room is insufficient either to develop public comments or to prepare for the hearing,
- (iii) The relevance of the requested information either to the issue which the commenter wishes to comment on, or to the hearing issue(s) for which the party has been admitted, and
- (iv) A showing that the requesting party has the capability to understand and utilize the requested information.

The request must be filed with the applicant no later than the date established by the Commission for filing discovery requests with the licensing board.

If the applicant declines to provide the information sought, within ten (10) days of receiving the request the applicant must send a written response to the requesting party setting forth with particularity the reasons for its refusal. The party may then request the licensing board to order disclosure. The party must include copies of the original request (and any subsequent

clarifying information provided by the requesting party to the applicant) and the applicant's response. The licensing board shall base its decision *solely* on the party's original request (including any clarifying information provided by the requesting party to the applicant), and the applicant's response.

Accordingly, a party requesting proprietary information from the applicant should ensure that its request sets forth in sufficient detail and particularity the information required to be included in the request. Similarly, the applicant should ensure that its response to any request states with sufficient detail and particularity the reasons for its refusal to provide the requested information. The licensing board may order the applicant to provide access to some or all of the requested information, subject to an appropriate non-disclosure agreement.

F. Ex Parte and Separation of Functions Restrictions

Unless the formal procedures of 10 CFR Part 2, Subpart G are approved for a formal hearing in the design certification rulemaking proceeding, the NRC staff will not be a party in the hearing and separation of functions limitations will not apply. The NRC staff may assist in the hearing by answering questions about the FSER put to it by the licensing board, or to provide additional information, documentation or other assistance as the licensing board may request. Furthermore, other than in a formal hearing, the NRC staff shall not be subject to discovery by any party, whether by way of interrogatory, deposition, or request for production of documents.

Second, the Commission has determined that once a request for an informal or formal hearing is received, certain elements of the *ex parte* restrictions in

10 CFR 2.780(a) will be applicable with respect to the subject matter of that hearing request. Under these restrictions, the Commission will communicate with interested persons/parties, the NRC staff, and the licensing board with respect to the issues covered by the hearing request only through docketed, publicly-available written communications and public meetings. Individual Commissioners may communicate privately with interested persons and the NRC staff; however, the substance of the communication shall be memorialized in a document which will be placed in the PDR and distributed to the licensing board and relevant parties.

VI. FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT: AVAILABILITY

The Commission has determined under the NEPA and the Commission's regulations in 10 CFR Part 51, Subpart A, that this proposed design certification rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and therefore an environmental impact statement (EIS) is not required. The basis for this determination, as documented in the environmental assessment, is that the amendment to 10 CFR Part 52 would not authorize the siting, construction, or operation of a facility using the U.S. ABWR design; it would only codify the U.S. ABWR design in a rule. The NRC will evaluate the environmental impacts and issue an EIS as appropriate in accordance with NEPA as part of the application(s) for the construction and operation of a facility.

In addition, as part of the environmental assessment for the ABWR design, the NRC reviewed pursuant to NEPA, GE's evaluation of various design alternatives to prevent and mitigate severe accidents that was submitted in GE's

"Technical Support Document for the ABWR". The Commission finds that GE's evaluation provides a sufficient basis to conclude that there is reasonable assurance that an amendment to 10 CFR Part 52 certifying the U.S. ABWR design will not exclude a severe accident design alternative for a facility referencing the certified design that would have been cost beneficial had it been considered as part of the original design certification application. These issues are considered resolved for the U.S. ABWR design.

The environmental assessment, upon which the Commission's finding of no significant impact is based, and the Technical Support Document for the ABWR are available for examination and copying at the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC. Single copies are also available from Mr. Harry Tovmassian, Mailstop T-9 F33, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, (301) 415-6231.

VII. PAPERWORK REDUCTION ACT STATEMENT

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements. The public reporting burden for this collection of information is estimated to average ____ hours per licensee respondent, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including

suggestions for reducing this burden, to the Information and Records Management Branch (T 6-F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0151), Office of Management and Budget, Washington, DC 20503.

VIII. REGULATORY ANALYSIS

The NRC has not prepared a regulatory analysis for this proposed rule. The NRC prepares regulatory analyses for rulemakings that establish generic regulatory requirements. Design certifications are not generic rulemakings. Rather, design certifications are Commission approvals of specific nuclear power plant designs by rulemaking. Furthermore, design certification rulemakings are initiated by an applicant for a design certification, rather than the NRC. Preparation of a regulatory analysis in this circumstance would not be useful because the design to be certified is proposed by the applicant rather than the NRC. For these reasons, the Commission concludes that preparation of a regulatory analysis is neither required nor appropriate.

IX. REGULATORY FLEXIBILITY ACT CERTIFICATION

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this proposed rulemaking will not have a significant economic impact upon a substantial number of small entities. The proposed rule provides standard design certification for a light water nuclear power plant design. Neither the design certification applicant, nor nuclear power plant licensees who reference this design certification rule, fall within

the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act, 15 U.S.C. 632, or the Small Business Size Standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121. Thus, this rule does not fall within the purview of the act.

X. BACKFIT ANALYSIS

The Commission has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule because these amendments do not impose requirements on existing 10 CFR Part 50 licensees. Therefore, a backfit analysis was not prepared for this rule.

List of Subjects in 10 CFR Part 52

Part 52 - Administrative practice and procedure, Antitrust, Backfitting, Combined license, Early site permit, Emergency planning, Fees, Incorporation by reference, Inspection, Limited work authorization, Nuclear power plants and reactors, Probabilistic risk assessment, Prototype, Reactor siting criteria, Redress of site, Reporting and recordkeeping requirements, Standard design, Standard design certification.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 553; the NRC proposes to adopt the following amendment to 10 CFR Part 52.

1. The authority citation for 10 CFR Part 52 continues to read as follows:

AUTHORITY: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1243, 1244, 1246, 1246, as amended (42 U.S.C. 5841, 5842, 5846).

2. In § 52.8, paragraph (b) is revised to read as follows:

§ 52.8 Information collection requirements: OMB approval.

* * * * *

(b) The approved information collection requirements contained in this part appear in §§ 52.15, 52.17, 52.29, 52.45, 52.47, 52.57, 52.75, 52.77, 52.78, 52.79, and Appendix A.

3. A new Appendix A to 10 CFR Part 52 is added to read as follows:

Appendix A To Part 52--Design Certification Rule
for the U.S. Advanced Boiling Water Reactor

1. Scope.

This Appendix constitutes the standard design certification for the U.S. Advanced Boiling Water Reactor (ABWR) design, in accordance with 10 CFR Part 52, Subpart B. The applicant for certification of the U.S. ABWR design was GE Nuclear Energy.

2. Definitions.

As used in this part:

(a) *Design control document* (DCD) means the master document that contains the 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.

(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.

(d) *Tier 2** means the portion of the Tier 2 information which cannot be changed without prior NRC approval. This information is identified in the DCD.

(e) All other terms in this rule have the meaning set out in 10 CFR 50.2, 10 CFR 52.3, or Section 11 of the Atomic Energy Act of 1954, as amended, as applicable.

3. [Reserved].

4. Contents of the design certification.

(a) Both Tier 1 and Tier 2 of the ABWR Design Control Document, GE Nuclear Energy, Revision 1, December 1994 are incorporated by reference. This incorporation by reference was 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 obtained 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.

(b) An 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 U.S. ABWR DCD.

(c) If there is a conflict between the U.S. ABWR DCD and either the application for design certification for the U.S. ABWR design or NUREG-1503, "Final Safety Evaluation Report related to the Certification of the Advanced Boiling Water Reactor Design," dated July 1994 (FSER), then the U.S. ABWR DCD is the controlling document.

5. Exemptions and applicable regulations.

(a) The U.S. ABWR design is exempt from portions of the following regulations, as described in the FSER (index provided in Section 1.6 of the FSER):

(1) Section VI(a)(2) of Appendix A to 10 CFR Part 100 - Operating Basis Earthquake Design Consideration;

(2) Section (b)(3) of 10 CFR 50.49 - Environmental Qualification of Post-Accident Monitoring Equipment;

(3) Section (f)(2)(iv) of 10 CFR 50.34 - Separate Plant Safety Parameter Display Console;

(4) Section (f)(2)(viii) of 10 CFR 50.34 - Post-Accident Sampling for Boron, Chloride, and Dissolved Gases; and

(5) Section (f)(3)(iv) of 10 CFR 50.34 - Dedicated Containment Penetration.

(b) Except as indicated in paragraph (c) of this section, the regulations that apply to the U.S. ABWR design are those regulations in 10 CFR Parts 20, 50, 73, and 100 [July 1994], that are applicable and technically relevant, as described in the FSER.

(c) In addition to the regulations specified in paragraph (b) of this section, the following regulations are applicable for purposes of 10 CFR 52.48, 52.54, 52.59 and 52.63:

(1) In the standard design, the effects of intersystem loss-of-coolant accidents shall 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.

(2)(i) Piping systems associated with pumps and valves subject to the test requirements set forth in 10 CFR 50.55a(f) shall be designed to allow for:

(A) Full flow testing of pumps and check valves at maximum design flow, and

(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 operate 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 must submit as part of the application:

(A) A program for testing check valves that incorporates the use of 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.

(3) 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) Provisions for independent backup manual controls and displays for critical safety functions in the control room.

(4) 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 safe shutdown, following a loss of the normal power supply and reactor trip.

(5) The electric power system of the standard 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 bus.

(6)(i) The requirements of 10 CFR 50.48(a)⁸ 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 provision in paragraph (i) of this section, all structures, systems, and components important to safety in the standard design shall 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 re-entry into that 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 an extent that could adversely affect safe-shutdown capabilities, including operator actions; and

⁸For the standard design, the footnote reference in 10 CFR 50.48(a) to Branch Technical Position Auxiliary Power Conversion System Branch BTP APCSB9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," will be to the July 1981 version.

(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 remains free of fire damage.

(7) The standard design must include and an applicant for a combined license which references this standard design certification rule must 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.

(8) 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.

(9) 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.

(10)(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 paragraphs (i) of this section, in combination with other features, shall 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.

(11) 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.

(12) 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.

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

(14)(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.

6. Issue resolution for the design certification.

(a) All nuclear safety issues associated with the information in the FSER or DCD are resolved within the meaning of 10 CFR 52.63(a)(4).

(b) 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).

7. Duration of the design certification.

This design certification may be referenced for a period of 15 years from [insert date 30 days after publication in the Federal Register], except as provided for in 10 CFR 52.55(b) and 52.57(b). This design certification remains valid for an applicant or licensee that references this certification until

their application is withdrawn or their license expires, including any period of extended operation under a renewed license.

8. Change process.

(a) Tier 1 information.

(1) Generic (rulemaking) changes to Tier 1 information are governed by the requirements in 10 CFR 52.63(a)(1).

(2) Generic changes to Tier 1 information are applicable to all plants referencing the design certification as set forth in 10 CFR 52.63(a)(2).

(3) Changes from Tier 1 information that are imposed by the Commission through plant-specific orders are governed by the requirements in 10 CFR 52.63(a)(3).

(4) Exemptions from Tier 1 information are governed by the requirements in 10 CFR 52.63(b)(1).

(b) Tier 2 information.

(1) Generic changes to Tier 2 information are governed by the requirements in 10 CFR 52.63(a)(1).

(2) Generic changes to Tier 2 information are applicable to all plants referencing the design certification as set forth in 10 CFR 52.63(a)(2).

(3) While the design certification is in effect under §§ 52.55 or 52.61, unless:

(i) A modification is necessary to secure compliance with the Commission's regulations applicable and in effect at the time the certification

was issued, or to assure adequate protection of the public health and safety or the common defense and security; and

(ii) Special circumstances as defined in 10 CFR 50.12(a) are present, the Commission may not impose new requirements by plant-specific order on Tier 2 information of a specific plant referencing the design certification.

(4) An applicant or licensee who references the design certification may request an exemption from Tier 2 information. The Commission may grant such a request only if it determines that the exemption will comply with the requirements of 10 CFR 50.12(a). The granting of an exemption on request of an applicant must be subject to litigation in the same manner as other issues in the construction permit, operating license, or combined license hearing.

(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, or an unreviewed safety question as defined in paragraphs (b)(5)(ii) or (b)(5)(iii) of this section. When evaluating the proposed change, an applicant or licensee must consider all matters described in the DCD, including generic issues and shutdown risk for all postulated accidents including severe accidents. These 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).

(ii) A proposed departure from Tier 2 information, other than severe accident issues identified in Section 19E including attachments EA through EE of the DCD, 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

(C) The margin of safety as defined in the basis for any technical specification is reduced.

(iii) A proposed departure from information associated with severe accident issues identified in Section 19E of the DCD, including attachments EA through EE, 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.

(iv) Departures from Tier 2 information made in accordance with Section 8(b)(5) above do not require an exemption from this design certification rule.

(c) Other requirements of this design certification rule.

An applicant or licensee who references the design certification may not depart from this rule's requirements, other than Tier 1 or 2 information, other than by an exemption in accordance with 10 CFR 50.12.

9. Records and Reports.

(a) *Records.*

(1) The applicant for this design certification must maintain a copy of the DCD that includes all generic changes to Tier 1 and Tier 2 information.

(2) An applicant or licensee that references this design certification must maintain records of all changes to and departures from the DCD pursuant to Section 8 of this appendix. Records of changes made pursuant to Section 8(b)(5) must include a written safety evaluation which provides the bases for the determination that the proposed change does not involve an unreviewed safety question, a change to Tier 1 or Tier 2* information, or a change to the technical specifications.

(b) *Reports.* An applicant or licensee that references this design certification must submit a report to the NRC, as specified in 10 CFR 50.4, containing a brief description of any departures from the DCD, including a summary of the safety evaluation of each. An applicant or licensee must also submit updates to the DCD to ensure that the DCD contains the latest material developed for both Tier 1 and 2 information. The requirements of 10 CFR 50.71(e) for safety analysis reports shall apply to these updates. These reports and updates must be submitted at the frequency specified below:

(1) During the interval from the date of application to the date of issuance of either a construction permit under 10 CFR Part 50 or a combined license under 10 CFR Part 52, the report and any updates to the DCD may be submitted along with amendments to the application.

(2) During the interval from the date of issuance of either a construction permit under 10 CFR Part 50 or a combined license under 10 CFR Part 52 until the applicant or licensee receives either an operating license under 10 CFR Part 50 or the Commission makes its findings under 10 CFR 52.103, the report must be submitted quarterly. Updates to the DCD must be submitted annually.

(3) Thereafter, reports and updates to the DCD may be submitted annually or along with updates to the safety analysis report for the facility as required by 10 CFR 50.71(e), or at such shorter intervals as may be specified in the license.

(c) *Retention Period.* The DCD, and the records of changes to and departures from the DCD must be maintained until the date of termination of the construction permit or license.

Dated at Rockville, Maryland, this ____ day of _____, 1995.

For the Nuclear Regulatory Commission.

James M. Taylor,
Executive Director for Operations.

ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL ASSESSMENT
RELATING TO THE CERTIFICATION OF THE
U.S. ADVANCED BOILING WATER REACTOR DESIGN
DOCKET NO. 52-001

1 INTRODUCTION AND SUMMARY

The U.S. Nuclear Regulatory Commission (NRC or the Commission) is considering whether to issue a design certification for the U.S. advanced boiling water reactor (ABWR) design. The design certification would be in the form of a rule amending Part 52 of Title 10 of the Code of Federal Regulations (10 CFR Part 52). To comply with the requirements of the National Environmental Policy Act of 1969 (NEPA), as amended, the Commission must consider the environmental impacts of issuing this amendment to 10 CFR Part 52. In addition, the Commission decided to consider severe accident mitigation design alternatives (SAMDAs) as part of this environmental assessment (EA) to resolve SAMDAs for NEPA on a generic basis for the U.S. ABWR design. The EA for the proposed rule is contained herein and is prepared in accordance with NEPA and 10 CFR Part 51.

This EA only addresses the environmental impacts of issuing a design certification rule for the U.S. ABWR and SAMDAs for the U.S. ABWR design. The environmental impacts of construction and operation of a facility at a particular site will be evaluated as part of the application(s) for siting, construction, and operation of that facility.

In an application dated September 29, 1987, the GE Nuclear Energy (GE) company applied for certification of the U.S. ABWR standard design by the NRC. The application was made in accordance with the procedures of 10 CFR Part 50, Appendix O, and the Policy Statement on Nuclear Power Plant Standardization, dated September 15, 1987. The application was docketed by the NRC staff on February 22, 1988 (Docket No. STN 50-605). On December 20, 1991, GE requested that its application be considered as an application for design approval and subsequent design certification pursuant to 10 CFR 52.45. Accordingly, the NRC staff assigned a new docket number (52-001) to the application on March 13, 1992.

The NRC has determined that the issuance of the proposed design certification rule is not a major Federal action significantly affecting the quality of the human environment, and therefore, has decided not to prepare an environmental impact statement (EIS) in connection with this action. The finding of no significant impact is based on the fact that the certification rule itself would not authorize the siting, construction or operation of the U.S. ABWR design; it would only codify the U.S. ABWR design in a rule that could be referenced in a construction permit (CP), early site permit (ESP), combined license (COL), or operating license (OL) application. Further, because the action is a rule, there are no resources involved which would have alternative uses.

The NRC also reviewed, pursuant to NEPA, GE's evaluation of design alternatives to prevent and mitigate severe accidents. Based on the review, the NRC finds that the evaluation provides a sufficient basis to conclude that there is reasonable assurance that an amendment to 10 CFR Part 52 certifying

the U.S. ABWR design will not exclude SAMDAs for a future facility that would have been cost beneficial had they been considered as part of the original design certification application. These issues are considered resolved for the U.S. ABWR design certification.

2 THE NEED FOR THE PROPOSED ACTION

The Commission has long sought the safety benefits of commercial nuclear power plant standardization, as well as the early resolution of design issues and finality of design issue resolution. The NRC plans to achieve these goals by certification of standard plant designs. Subpart B to 10 CFR Part 52 allows for certification by rule of an essentially complete nuclear plant design.

The proposed action would amend 10 CFR Part 52 to certify the U.S. ABWR design. The amendment would allow prospective applicants for a combined license (COL) under Part 52 or for a construction permit under Part 50 to reference the certified U.S. ABWR design. Those portions of the U.S. ABWR design included in the scope of the design certification would not be subject to further regulatory review or approval. In addition, the amendment would resolve the issue of consideration of SAMDAs for any future facilities that reference the U.S. ABWR design.

3 ALTERNATIVES TO THE PROPOSED ACTION

The alternatives to certifying the U.S. ABWR design in an amendment to 10 CFR Part 52 are either (1) no action approving the design or (2) issuing a final design approval (FDA), but not certifying the design. These alternatives in and of themselves would not have a significant impact affecting the quality of the human environment because they do not authorize the siting, construction, or operation of a facility.

In the first case, the design would not be approved. Therefore, a facility to be built as a U.S. ABWR would be required to be licensed under 10 CFR Part 50 or 10 CFR Part 52, Subpart C, as a custom plant application. All design issues would have to be considered as part of each application to construct and operate a U.S. ABWR facility at a particular site. This alternative would not achieve the benefits of standardization, provide early resolution of design issues, or provide finality of design issue resolution.

In the second case, the U.S. ABWR would be issued an FDA under 10 CFR Part 52, Appendix O, but the design would not be certified in a rulemaking. Therefore, although the NRC would have approved the design, the design could be modified and thus require re-evaluation as part of each application to construct and operate a U.S. ABWR facility at a particular site. This alternative would provide early resolution of issues, but would not achieve the benefits of standardization or provide finality of design issue resolution.

The NRC sees no advantage in either of the alternatives compared to the design certification rulemaking proposed for the U.S. ABWR. Although neither the alternatives nor the proposed design certification rulemaking would have a significant impact affecting the quality of the human environment in and of themselves, the rulemaking provides for standardization, as well as early

resolution of design issues and finality of design issue resolution for design issues that are within the scope of the design certification, including SAMDAs. Therefore, the NRC concludes that the alternatives to rulemaking would not achieve the objectives of the Commission intended by certification of the U.S. ABWR design pursuant to 10 CFR Part 52, Subpart B.

3.1 Severe Accident Design Alternatives

The Commission decided to evaluate design alternatives for severe accidents as part of the design certification for the U.S. ABWR design, consistent with its objectives of achieving early resolution of issues for the design and standardization. The Commission, in a 1985 policy statement, defined the term "severe accident" as those events which are "beyond the substantial coverage of design basis events" and includes those for which there is substantial damage to the reactor core whether or not there are serious offsite consequences. Design basis events are considered to be those analyzed in accordance with the NRC's Standard Review Plan (NUREG-0800) and documented in Chapter 15 of the ABWR Design Control Document (DCD).

As part of its design certification application, GE performed a probabilistic risk assessment (PRA) for the ABWR design to (1) identify the dominant severe accident sequences and associated source terms for the design; (2) modify the design, based on PRA insights, to prevent or mitigate severe accidents and reduce the risk of severe accidents; and (3) provide a basis for concluding that all reasonable steps have been taken to reduce the chances of occurrence, and to mitigate the consequences, of severe accidents. GE's analysis is documented in Chapter 19 of the ABWR standard safety analysis report (SSAR).

In addition to considering alternatives to the rulemaking process as discussed in Section 3, applicants for reactor design approvals or construction permits must also consider alternative design features for severe accidents based on (1) the requirements of 10 CFR Part 50 and (2) a court ruling relating to NEPA. These requirements can be summarized as follows:

- 10 CFR 50.34(f)(1)(i) requires the applicant to perform a plant/site specific probabilistic risk assessment, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant.
- The U.S. Court of Appeals decision, in Limerick Ecology Action v. NRC, 869 F.2d 719 (3rd Cir. 1989), effectively requires the NRC to include consideration of certain severe-accident-mitigation design alternatives (SAMDAs) in the environmental impact review performed under Section 102(2)(c) of NEPA as part of the operating license application.

Although these two requirements are not directly related, the purpose is the same: to consider alternatives to the proposed design, to evaluate potential alternatives for improvements in the plant design for increased safety performance during severe accidents, and to prevent viable alternatives from being foreclosed. It should be noted that the Commission is not required to

consider alternatives to the design in this EA on the proposed rulemaking; however, as a matter of discretion, the Commission has determined that consideration of SAMDAs is consistent with the intent of 10 CFR Part 52 for early resolution of issues, finality of design issue resolution, and enhancing the benefits of standardization.

In its decision in Limerick, the Court of Appeals for the Third Circuit expressed its opinion that it was likely that evaluation of SAMDAs for NEPA purposes would be difficult to perform on a generic basis. However, the NRC has determined that generic evaluation of SAMDAs for the U.S. ABWR standard design is warranted because (1) the design and construction of all plants referencing the certified U.S. ABWR design will be governed by the rule certifying the design and design alternatives will be more difficult to implement; and (2) the site parameters specified in the rule establish bounding consequence profiles. Should the actual site parameters for a particular site significantly exceed those assumed in this EA, SAMDAs would have to be re-evaluated in the site-specific environmental report and EIS.

GE initially submitted its response to 10 CFR 50.34(f) in SSAR Section 19P as part its application for a final design approval (FDA) and subsequent design certification for the ABWR. The NRC issued an FDA for the ABWR in July 1994, and provided its evaluation of SSAR Section 19P in FSER Section 20.5.1. Subsequently, as part of its preparation of the DCD for the design certification rulemaking, GE updated and relocated Section 19P of the SSAR to Attachment A of the "Technical Support Document (TSD) for the ABWR", dated December 1994 (see letter from J. Quirk (GE) to R.W. Borchardt (NRC), December 21, 1994). GE submitted the TSD to meet the Commission's requirement to consider SAMDAs as part of the design certification application.

3.2 Estimate of Risk for U.S. ABWR

In response to 10 CFR 50.34(f)(1)(i), GE provided an evaluation of the U.S. ABWR design improvements in SSAR Section 19P. GE's evaluation of risk was based on the risk-reduction potential for internal events only. The limited scope was a consequence of GE's use of alternative analyses for external events. The staff's evaluation of this approach to external events is in FSER Section 19.1.3. The staff's evaluation of design alternatives considering risk from external events is discussed in section 3.5.5 of this environmental assessment.

Risk was defined in terms of person-Sieverts (Sv), and was calculated by multiplying the probability of an event per year by its consequences (the whole body exposure to the population within 50 miles of the release) over 60 years. GE used the CRAC2 code to estimate offsite consequences at five different sites, each representing a different geographic region of the U.S. Offsite consequences were calculated for each release class from the U.S. ABWR Level 2 probabilistic risk assessment (PRA) which contained accident progression analysis and source term analysis following the Level 1 PRA accident sequence analysis. The meteorological and population data were obtained from previously developed information contained in Sandia National Laboratories' "Technical Guidance for Siting Criteria Development" (NUREG/CR--2239, December 1986). The source terms were determined using the MAAP code

for each of the release categories as discussed in Chapter 19 of the final safety evaluation report (FSER). The results of the five sets of consequence calculations were averaged together to represent a typical site in the U.S.

GE's estimate of the cumulative offsite risk to the population within 50 miles of the site appears in Table 1 of GE's TSD. GE calculated the total cumulative exposure from all analyzed accidents to be about 0.003 person-Sieverts (Sv) (0.3 person-rem) over a 60-year plant life. The extremely small level of risk calculated by GE is primarily due to the low estimated core-damage frequency for the U.S. ABWR (1.6×10^{-7} per reactor-year). This means that even if all core-damage accidents led to the worst release, on the basis of GE's core-damage frequency estimates for internal events, the total exposure would be only about 0.3 person-Sv (30 person-rem). The risk calculated in the analysis supported GE's conclusion that none of the design improvements beyond those already incorporated in the U.S. ABWR design are cost beneficial.

As a result of the low estimated core-damage frequency and associated risk levels for the U.S. ABWR, any modifications costing more than a few dollars would not be cost effective, even if the design modification totally eliminated the severe accidents or their consequences.

3.3 Identification of Potential Design Alternatives

GE's evaluation of potential design improvements in response to the requirements of 10 CFR 50.34(f)(1)(i) also gives a technical basis for the staff to evaluate the SAMDAs, as required by the *Limerick* decision. The staff's review of GE's evaluation is presented below.

By surveying previous industry- and NRC-sponsored studies of features to prevent and mitigate severe accidents, GE prepared a set of potential severe-accident design alternatives for the U.S. ABWR and developed a composite list of 68 potential design alternatives, organized into 14 categories. The list of potential design alternatives considered for the U.S. ABWR is presented in Table 2 of the TSD.

GE eliminated certain design alternatives from further consideration because they were not applicable to the U.S. ABWR (e.g., post accident inerting system, hydrogen control by venting), were considered as part of another alternative (e.g., diverse injection system, fuel cells), or were already incorporated in the design. Examples of design alternatives already included in the design were improved low-pressure injection system (fire pump), reactor water clean-up decay heat removal, low-flow vent (unfiltered), and combustible gas control (pre-inerted containment). These and additional U.S. ABWR design features that contribute to low core-damage frequency and risk for the U.S. ABWR design are discussed further in FSER Section 19.1. After this screening, 21 potential design alternatives applicable to the design, covering 12 of the 14 categories, remained for further consideration.

3.4 Description of Design Alternatives

The design alternatives selected by GE for cost-benefit evaluation are described in Section A.3 and A.4 of the TSD. The design alternatives are summarized below.

- (1) Emergency procedures guidelines (EPGs) and accident management guidelines (AMGs) for severe accidents - Expand the EPGs and emergency operating procedures (EOPs) to address arrest of a core melt, emergency planning, radiological release assessment, and other areas related to severe accidents. This modification would make manual actions in response to core-damage events more reliable.
- (2) Computer-aided instrumentation - Apply expert system-based improvements to plant status monitoring, including human-engineered displays of important variables in the EPGs and AMGs, and displays of procedural options for operators to evaluate during severe accidents. This modification would make manual actions to prevent core damage more reliable.
- (3) Improved maintenance procedures and manuals - Improve maintenance manuals and give more information about U.S. ABWR components important to reducing risk. These manuals and this information would make equipment important for preventing and mitigating accidents more reliable.
- (4) Passive high-pressure system - Add an isolation condenser-type high-pressure system for removing decay heat from both the core and the containment. The modification would be equivalent to adding another reactor core isolation cooling (RCIC) system and containment heat removal system.
- (5) Improved depressurization - Supply manually controlled, seismically protected air operators to permit manual reactor pressure vessel depressurization in the event of loss of dc control power or control air events. Improved depressurization would reduce the threat of containment failure due to high-pressure melt ejection and allow more reliable access to low-pressure systems.
- (6) Suppression pool jockey pump - Add a small, ac-independent makeup pump to allow low-pressure decay heat removal from the reactor pressure vessel (RPV) using suppression pool water as the source. This modification would have the same benefits as the ac-independent "fire-water" addition mode of residual heat removal (RHR), but without the associated long-term containment water inventory buildup concerns.
- (7) Safety-related condensate storage tank (CST) - Upgrade the structure of the CST so that it could supply makeup water to the reactor after a large seismic event. This modification would enhance core injection capabilities in seismic events by giving an alternative to the suppression pool as a source of water for injection.

- (8) Larger-volume containment - Increase the volume of containment by a factor of two. This modification would reduce the peak pressures associated with an energetic event, making drywell head failure less likely, and would reduce the rate of long-term containment pressurization, thereby delaying fission product release.
- (9) Increased containment pressure capacity - Increase the ultimate pressure capacity of containment (including seals) to a level at which all release modes except normal containment leakage are eliminated.
- (10) Improved vacuum breakers - Add a second vacuum breaker valve in each of the eight drywell-to-wetwell vacuum breaker lines to make these valves redundant. This modification would reduce the potential for suppression pool bypass due to stuck-open or leaking vacuum breaker valves.
- (11) Improved bottom head penetration design - Change the transition piece (used to connect the stainless steel RPV drainline to the RPV) from carbon steel to a material with a higher melting point, such as Inconel. Also establish external welds or restraints on the control rod drives external to the vessel so that the drives would not be ejected in the event the internal welds fail. This modification would delay reactor vessel failure by several hours, thereby increasing the potential to arrest core damage in vessel, but might also make the lower head more likely to fail grossly on overpressure.
- (12) Larger-Volume suppression pool - Increase the size of the suppression pool to reduce pool heatup rates. This modification would reduce the frequency of core melt from Class II sequences (loss of containment heat removal) and anticipated transients without scram (ATWS) sequences by giving operators more time to act and heat removal systems more time to recover.
- (13) Low-flow filtered vent - Add a filter system external to the containment to further reduce the magnitude of radioactive releases via containment venting. The system would be similar to the multiple-venturi scrubbing systems in some plants in Europe. The system filters would scrub fission products better than the suppression pool at present, but would not affect releases due to drywell head failure and containment bypass sequences.
- (14) Drywell head flooding - Provide an additional line to permit intentional flooding of the upper drywell head using the existing firewater addition system. Drywell head flooding would cool the drywell head seal, preventing its failure, and scrub fission products in the event of drywell head leakage. Instrumentation and controls to permit manual control from the control room to accomplish drywell head flooding were included in the evaluation as part of this modification.
- (15) Additional service water pump - Add another service water cooling loop (pump and heat exchanger) to make the service water network more reliable. This loop could remove heat from any one of the three ECCS

systems, making failure of injection due to loss of component cooling less frequent.

- (16) Steam-driven turbine generator - Add a steam-driven turbine generator that uses reactor steam and exhausts to the suppression pool. This modification would reduce the frequency of station blackout sequences in the same way that adding another gas turbine generator would.
- (17) Alternate pump power source - Add a separate diesel generator and supporting auxiliaries to power the feedwater or condensate pumps. This modification would remove the reliance of these pumps on offsite power and permit them to be used as a backup to the high-pressure core flooders (HPCF) and the low-pressure core flooders (LPCF).
- (18) Dedicated dc power supply - Add a separate, diverse dc power source (fuel cell or separate battery) to supply a dc motor-pump combination for RPV and containment cooling. This modification would further reduce the risk from loss of offsite power and station blackout.
- (19) ATWS-sized vent - Provide a wetwell vent line capable of passing the steam flow from an ATWS. The system would be significantly larger than the existing containment overpressure protection system (COPS) design and could be manually initiated from the control room. This system would prevent a containment overpressure failure in ATWS events thus preventing failure of other containment systems and thereby preventing core damage.
- (20) Reactor building sprays - Modify the fire-water spray system in the reactor building to spray in areas vulnerable to fission product release. This modification would reduce the risk associated with releases into the reactor building, such as drywell head failures and containment bypass events, but would not affect releases via COPS.
- (21) Flooded rubble bed - Provide a bed of refractory pebbles that would be flooded with water. The rubble bed would impede the flow of molten corium to the concrete drywell structures and increase the available heat transfer area, thereby enhancing debris coolability. This modification would further reduce the potential for core-concrete interactions in the U.S. ABWR. A major drawback of the modification is that additional experimental testing would be necessary to validate the concept for the U.S. ABWR application.

The NRC staff has reviewed the set of potential design alternatives identified by GE in the TSD and finds the set to constitute a reasonable range of design alternatives. The list includes all alternatives identified in the NRC containment performance improvement (CPI) program and in the NRC review of SAMDAs for the Limerick Generating Station, that would be applicable to the U.S. ABWR. Although the list does not include one of the SAMDAs considered as part of the NRC's review of SAMDAs for Comanche Peak, namely, improved instrumentation for containment bypass sequences, this improvement would not significantly reduce risk potential for the U.S. ABWR since the level of residual risk is already low compared to operating plants and in absolute

terms. The NRC notes that the set of design alternatives is not all inclusive, since additional, possibly even less expensive, design alternatives can always be postulated. However, the NRC concludes that the benefits of any additional modifications are unlikely to exceed the benefits of the modifications evaluated and that the alternative improvements would not likely cost less than the least expensive alternatives evaluated, when the subsidiary costs associated with maintenance, procedures, and training are considered. On this basis, the NRC concludes that the set of potential design alternatives identified by GE is acceptable.

3.5 Risk Reduction Potential of Design Alternatives

3.5.1 GE Evaluation of Risk Reduction Potential

GE used the estimated reduction in cumulative risk of accidents occurring during the life of the plant resulting from the above design changes to estimate the benefits of plant improvements. Estimates of risk reduction were developed by determining the approximate effect of each modification on the frequency of the various release classes in the probabilistic risk assessment (PRA). GE's basis for estimating the risk reduction for each design improvement is given in TSD Section A.4 and summarized in Table 1 of this EA.

The NRC staff has reviewed GE's bases for estimating how much the various design alternatives would reduce risks. The NRC staff notes that GE exercised considerable judgment in estimating the risk reduction potential but that, in general, the rationale and assumptions on which the risk reduction estimates are based (center column of Table 1) are reasonable and in many cases conservative (as described below, the NRC staff did not analyze individual SAMDA potential risk reduction, but made bounding assumptions). However, this is not to say that the estimates of person-Sv averted are conservative, because the staff does not completely agree with GE's characterization of baseline risk. For example, the risk reduction potential of improved vacuum breakers appears to be underestimated in GE's analysis. GE estimates that improved vacuum breakers (addition of a second vacuum breaker valve in series with each of the existing valves) would reduce risk by about 4×10^{-7} person-Sv (4×10^{-5} person-rem). This value is largely due to significant credit for fission-product removal by wetwell sprays (when available) and to the failure to consider the impact of the design improvement on bypass scenarios in which sprays are unavailable. GE's risk reduction estimate for this improvement would increase by at least three orders of magnitude if the latter factor were taken into account. Nevertheless, the risk reduction would remain small since the probability of the events involved is on the order of 1×10^{-10} per reactor-year.

3.5.2 Staff Evaluation of Risk Reduction Potential

In view of the extremely small residual risk for the U.S. ABWR, rather than separately assess risk-reduction potential of each U.S. ABWR design improvement, the NRC staff used a bounding assumption that each improvement would eliminate all of the risk for internal events for the U.S. ABWR (0.01 person-Sv (1 person-rem) for the 60-year plant life). This approach tends to overestimate the benefits of each individual SAMDA because the U.S. ABWR risk

profile reflects contributions from several unique types of sequences (e.g., station blackout, containment bypass, loss-of-coolant accidents). An individual design improvement would generally reduce or eliminate some of these contributors but would not be effective on others. Moreover, many different modes of containment failure must be dealt with to ensure containment integrity in a severe accident. Thus, a carefully selected set of plant improvements would be needed, each one acting on particular components of risk, to effectively and significantly reduce total risk.

3.5.3 Costs of SAMDAs

GE determined the approximate costs for each design improvement. The costing methodology and assumptions are described in TSD Section A.1.3.1. The cost of each plant improvement is given in Table 4 of the TSD and in TSD Section A.5 on an item-by-item basis.

GE indicated that the cost estimates represent the incremental costs that would be incurred in a new plant, rather than costs incurred in backfit. GE also stated that it intentionally biased costs on the low side, but that it took all known or reasonably expected costs into account to arrive at a reasonable minimum cost.

For modifications that reduce core-damage frequency, GE reduced the costs of the design alternatives by an amount proportional to the reduction in the present worth of the risk of averted onsite costs. The onsite costs that were considered include replacement power at \$0.013/kwh differential cost, direct accident costs including onsite cleanup at \$2 billion, and the economic loss of the facility at \$1.4 billion. The resulting costs for each of the design alternatives are given in Table 4 of the TSD.

The NRC staff reviewed the bases for GE's cost estimates and finds them acceptable. For certain alternatives, the NRC staff also compared GE's cost estimates with estimates developed elsewhere for similar alternatives, even though the bases for some of these cost estimates were different. The NRC staff considered the cost estimates developed as part of the evaluation of design alternatives for GESSAR II (NUREG-0979, Supplement 4) and the review of SAMDAs for Limerick and Comanche Peak (NUREG-0974 and -0775, respectively).

The NRC staff noted a number of inconsistencies in the cost estimates. For example, GE's cost estimates for improved vacuum breakers (\$100,000), modified reactor building sprays (\$100,000), and ATWS-sized vent (\$300,000) were considerably less than expected, whereas the costs for SAMDAs such as improved bottom head penetration design (\$750K) and flooded rubble bed (approximately \$19 million) were much higher than expected. As explained in the sensitivity analysis in Section 3.5.5, none of the SAMDAs are within two orders of magnitude of being cost beneficial. Thus, even if those cost estimates that appear high were reduced by a factor of ten, the SAMDAs would still not be cost beneficial. Accordingly, the NRC staff has used GE's cost estimates in the cost/benefit comparison analysis below.

Only rough approximations of the costs of specific alternatives are possible at this time. Large uncertainties exist because detailed designs are not

available and because experience with construction and licensing problems that could surface in this type of work is limited. However, even though the U.S. ABWR design is still in the design phase, relatively large costs are anticipated for many of the design alternatives, which would involve first-of-a-kind engineering and would need to be integrated into the existing design. In addition, the introduction of a new system initiates a series of related requirements such as incremental training, procedural changes, and possible licensing requirements. These are all legitimate costs and must be considered in a comprehensive cost estimate.

Therefore, the NRC staff considers GE's approximate cost estimates as adequate, given the uncertainties surrounding the underlying cost estimates, and the level of precision necessary given the greater uncertainty inherent on the benefit side, with which these costs were compared.

3.5.4 Cost/Benefit Comparison

GE compared costs and benefits to determine whether any of the potential severe accident design features were justifiable. GE's estimates of the cost per person-Sv (person-rem) averted for the various design alternatives are presented in Table 2 of this EA. The GE values are based on the risk-reduction estimates reported in Table 1 of this EA, whereas the NRC staff values are based on the conservative assumption that each design improvement would eliminate all of the residual risk (0.01 person-Sv (1 person-rem) over the 60-year plant life).

In accordance with current NRC practice (NUREG-3568), GE used a screening criterion of \$100,000 per person-Sv (\$1000 per person-rem) averted to determine whether any of the design alternatives could be cost effective. According to GE's evaluation as shown in Table 2, the potential cost per averted person-Sv ranges from about \$170 million to \$2 billion for the various suggested modifications, far exceeding the \$100,000 per person-Sv (\$1000 per person-rem) criterion. On this basis, GE concluded that no additional modifications to the U.S. ABWR design are warranted.

The NRC staff agrees that none of the design alternatives are cost effective. The NRC staff notes that using the least expensive modifications (estimated to cost about \$100,000), and conservatively assuming that all risk is averted (0.01 person-Sv (1 person-rem)), the resulting cost/benefit would be \$10 million per person-Sv (i.e., $\$100,000 / 0.01 \text{ person-Sv} = \$10 \text{ million/person-Sv}$) (\$100,000/person-rem), which is well in excess of the \$100,000 per person-Sv (\$1000 per person-rem) criterion. Realistically, individual design alternatives only partly reduce the residual risk for the U.S. ABWR, resulting in a much higher cost/benefit ratio for even the most cost beneficial case.

Therefore, the NRC concludes that, because of the low residual risk for the U.S. ABWR and the \$100,000 per person-Sv (\$1000 per person-rem) criterion, none of the modifications evaluated would be cost effective.

3.5.5 Further Considerations

The NRC staff has reviewed the assumptions on which this conclusion is based and has considered the effect of uncertainties in estimating core-damage frequency, the use of alternative cost-benefit criteria, and the inclusion of external events within the scope of the analysis.

GE's uncertainty analyses for the Level 1 portion of the PRA (see FSER Section 19.1.3.2.5) showed the 95th-percentile core-damage frequency (CDF) to be 4.5×10^{-7} per reactor-year. This is higher by a factor of three than the mean value on which the cost-benefit analysis is based, but is still very low compared to operating plants (CDF range of 10^{-4} - 10^{-5} per reactor-year) and in absolute terms. Even if the benefits of the various design alternatives were requantified on the basis of this upper bound value, none of the alternatives would become cost beneficial. This would remain the case even if the cost-benefit criterion was also increased by a factor of 10 to \$1 million per person-Sv (\$10,000 per person-rem) averted, since the most cost beneficial design alternative is still at least an order of magnitude greater than this criterion (e.g., cost/benefit = $\$0.1\text{M}/0.00060 \text{ person-Sv} = \$170 \text{ million per person-Sv averted}$).

If external events are included, the estimate of U.S. ABWR risk could be one or possibly two orders of magnitude higher than considered in this analysis. For example, considering the NRC staff review of GE's original seismic PRA, as documented in the Draft SER, the total risk from internal and seismic events for the 60-year plant life would range from about 0.4 to 2 person-Sv (40 to 200 person-rem), depending on the site population. The values for the final U.S. ABWR design are actually somewhat less, since these estimates do not consider plant improvements incorporated in the design after the original PRA analysis, including upgrading the seismic capability of the diesel-driven firewater pump. However, even without taking credit for these features, the cost/benefit analysis would not justify incorporation of additional SAMDAs. Because most external event analyses submitted to the NRC show that seismic events dominate risk for external events, the NRC staff assessed the design alternatives using seismic risk as a bounding analysis for other external events, including fires and internal floods.

Even assuming the highest estimate of total risk (2 person-Sv (200 person-rem)) and complete elimination of all risk, any design modifications or combinations costing more than \$200,000 would not be cost beneficial (2 person-Sv averted risk $\times$ \$100,000/person-Sv = \$200,000) (This assumption of complete elimination of all risk is very conservative as evidenced by GE's analysis, which shows that modifications estimated to cost less than \$200,000 have a relatively low risk-reduction potential and would eliminate only about 10 percent of the residual risk).

For the four design modifications costing less than \$200,000, drywell head flooding appears to be the most cost beneficial at \$170 million/person-Sv averted. However, conservatively assuming a total residual risk of 2 person-Sv (200 person-rem) for the ABWR, drywell head flooding would have to eliminate 50-percent (1 person-Sv (100 person-rem)) or more of this risk to be considered cost beneficial. However, based on the analysis of internal

events, drywell head flooding accounts for only a small reduction (a few percent) in risk. The risk reduction for external events is also expected to be small, since this modification affects only one of the numerous contributors to risk. This design improvement therefore would not be cost beneficial. Based on an inspection of Table 2 of this report, the other three design modifications also would not yield significant risk reductions and therefore would not be cost beneficial.

In summary, the NRC concludes that with the significant margins in the results of the cost-benefit analysis, considering these factors would not change the findings of the analysis.

3.6 Conclusions

As discussed in FSER Chapter 19, GE has extensively used the results of a PRA to arrive at a final U.S. ABWR design. Based on the insights obtained from the PRA for the U.S. ABWR standard design, design features have been incorporated into the design to reduce risk, including risk from severe accidents. Consequently, the estimated core-damage frequency and risk calculated for the U.S. ABWR are very low both relative to operating plants and in absolute terms. The low core-damage frequency and risk for the U.S. ABWR reflects GE's efforts to systematically minimize the effect of initiators and sequences that have contributed to risk in previous BWR PRAs. GE has done so largely by incorporating a number of hardware improvements in the U.S. ABWR design. These include the provision of three separated divisions of the emergency core cooling system (ECCS), a diverse and independent combustion gas turbine capable of providing ac power to any of the three divisions, an ac-independent water addition system, and a fine-motion control rod drive system as a backup to the hydraulic drive system. Several additional design features have also been incorporated in the U.S. ABWR design to mitigate the consequences of a core-damage event, including inerting of the containment atmosphere, a lower drywell flooders system and a containment overpressure protection (vent) system, the use of basaltic concrete in the lower drywell, and an increased containment ultimate pressure capacity.

Because the U.S. ABWR design already includes numerous plant features to reduce core-damage frequency and risk, additional plant improvements would be unable to significantly reduce the risk of either internally or externally initiated events. For example, the U.S. ABWR seismic design basis (0.3g safe-shutdown earthquake) has been shown to result in an ability to withstand earthquakes well beyond the design basis, as characterized by a high confidence with low probability of failure (HCLPF) value of at least 0.6g. Moreover, with the features already incorporated in the U.S. ABWR design, the ability to estimate core-damage frequency and risk approaches the limitations of probabilistic techniques. Specifically, when core-damage frequencies of 1 in 100,000 or 1 million years are estimated in a PRA, the areas of the PRA where modeling is least complete or supporting data is sparse or even nonexistent could actually contribute most to risk. Areas not modeled or incompletely modeled include human reliability, sabotage, rare initiating events, construction or design errors, and systems interactions. Although improvements in the modeling of these areas may introduce additional contributors to

core-damage frequency and risk estimates, the NRC staff does not expect that they would be significant in absolute terms.

In 10 CFR 50.34(f)(1)(i), the Commission requires the applicant to perform a plant- or site-specific probabilistic risk assessment, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant. The NRC evaluated GE's response to this item in Section 20.5.1 of the FSER. In view of the foregoing, the NRC concludes that the PRA and GE's use of the insights of this study to improve the design of the U.S. ABWR meet this requirement for purpose of design certification pursuant to 10 CFR Part 52. The NRC concurs with GE's conclusion that none of the potential design modifications evaluated are justified on cost-benefit considerations. The NRC further concludes that any other design changes are unlikely to be justifiable on the basis of person-Sv exposure considerations because the estimated core-damage frequencies would remain very low on an absolute scale.

4 THE ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

The issuance of an amendment to 10 CFR Part 52 certifying the U.S. ABWR design would not constitute a significant environmental impact. The amendment would only codify the results of the NRC's review and approval of the U.S. ABWR design as defined in the FSER, dated July 1994 (NUREG-1503). Further, because the action is a rule, there are no resources involved that would have alternative uses.

In section 3 of this EA the NRC reviewed alternatives to the design certification rulemaking and alternative design features related to the prevention and mitigation of severe accidents. Consideration of alternatives under NEPA were necessary for two reasons: 1) to show that the design certification rule is the appropriate course of action, and 2) to ensure that there are no cost-beneficial design changes relating to the prevention and mitigation of severe accidents that were excluded from the design, as codified in the design certification rule. The NRC concludes that the alternatives to design certification did not provide for resolution of issues as did the proposed design certification rulemaking.

The design certification rulemaking is in keeping with the Commission's intent in the Standardization and Severe Accident Policy Statements, and 10 CFR Part 52, to make future plants safer than the current generation plants, to achieve early resolution of licensing issues, and to enhance the safety benefits of standardization. Through its own independent analysis, the NRC also concludes that GE adequately considered an appropriate set of SAMDAs and none were found to be cost-beneficial. Although no design changes resulted from the SAMDAs review, GE did make changes to the U.S. ABWR design based on the results of the PRA. These changes were related to severe accident prevention and mitigation, but were not considered in the SAMDA evaluation because they were already part of the design. See FSER Section 19.1.3.2.2, "PRA as a Design Tool."

The certification rule by itself would not authorize the siting, construction, or operation of an U.S. ABWR design nuclear power plant. The issuance of a

construction permit, early site permit, combined license, or operating license for the U.S. ABWR design will require a prospective applicant to address the environmental impacts of construction and operation at a specific site. At that time, the NRC will evaluate the environmental impacts and issue an environmental impact statement (EIS) in accordance with NEPA. The SAMDAs analysis for the U.S. ABWR, however, has been completed as part of this environmental assessment and will not need to be evaluated again as part of an EIS related to siting, construction, or operation.

5 AGENCIES AND PERSONS CONSULTED, AND SOURCES USED

The NRC concludes that the proposed design certification rulemaking does not result in a significant environmental impact because the action does not authorize the construction and operation of a facility at a particular site. Therefore, the staff did not issue this EA for comment by Federal, State, and local agencies. The NRC's finding of no significant environmental impact, based on the EA, will be published in the Federal Register with the proposed U.S. ABWR design certification rule. Comments received as a result of the Federal Register notice will be considered as part of the development of the final rule.

The sources for this EA include the "Technical Support Document for the ABWR", Revision 1, December 1994 (Attachment to a letter, J.F. Quirk (GE) to R.W. Borchardt (NRC), December 21, 1994); GE's U.S. "ABWR Standard Safety Analysis Report", as amended, July 1994; and the NRC's "Final Safety Evaluation Report Related to the Certification of the Advanced Boiling Water Reactor Design" (NUREG-1503, Volumes 1 and 2), July 1994.

6 FINDING OF NO SIGNIFICANT IMPACT

The Director, Office of Nuclear Reactor Regulation (NRR), has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in 10 CFR Part 51, Subpart A, that this proposed rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and therefore, an environmental impact statement is not required.

The basis for the determination, as documented in the environmental assessment, is that the amendment to 10 CFR Part 52 would not authorize the siting, construction, or operation of a facility using the U.S. ABWR design; it would only codify the U.S. ABWR design in a rule. The NRC will evaluate the environmental impacts and issue an environmental impact statement (EIS) as appropriate in accordance with NEPA as part of the application(s) for the siting, construction, or operation of a facility.

In addition, as part of the environmental assessment, the NRC reviewed, pursuant to NEPA, GE's evaluation of various design alternatives to prevent and mitigate severe accidents that was submitted in GE's "Technical Support Document for the ABWR". The Director of NRR finds that GE's evaluation provides a sufficient basis to conclude that there is reasonable assurance that an amendment to 10 CFR Part 52 certifying the U.S. ABWR design will not exclude a severe accident design alternative for a facility referencing the

certified design that would have been cost beneficial had it been considered as part of the original design certification application. The evaluation of these issues under NEPA is considered resolved for the U.S. ABWR design.

Table 1 Summary of GE's Assessment of Risk Reduction for Candidate Design Improvements

POTENTIAL ABWR DESIGN MODIFICATION	GE's BASIS FOR ESTIMATING RISK REDUCTION	PERSON-SV (PERSON-REM) AVERTED
Accident Management Severe accident EPGs/AMGs Computer-aided instrumentation Improved maintenance procedures/manuals	10% reduction in failure rates for manually initiated mitigative actions 10% reduction in failure rates for manually initiated preventive actions 10% improvement in reliability of HPCF, RCIC, RHR, LPCF	0.00015 (0.015) 0.00010 (0.01) 0.00016 (0.016)
Decay Heat Removal Passive high-pressure system Improved depressurization system Suppression pool jockey pump Safety-related condensate storage tank	Equivalent to adding a diverse RCIC and RHR system with 10% unavailability Factor of 2 reduction in depressurization failure rates 10% improvement in reliability of low-pressure makeup (resulting in 2% reduction in core damage frequency from low-pressure sequences) Engineering judgement	0.00069 (0.069) 0.00042 (0.042) 0.00002 (0.002) 0.00010 (0.01)
Containment Capability Larger-volume containment Increased containment pressure capacity Improved vacuum breakers Improved bottom head penetration design	Elimination of all containment release modes involving drywell head failure (Cases 3, 6, 7, 8, 9) Elimination of all containment release modes except normal containment leakage Elimination of releases from Release Class 2 Factor of 2 increase in the probability of arresting core damage in vessel	0.00150 (0.15) 0.0016 (0.16) 0.0000004 (0.00004) 0.00057 (0.057)
Containment Heat Removal Larger-volume suppression pool	Elimination of Class II Sequences	0.000002 (0.0002)
Containment Mass Removal Low-flow filtered vent	Elimination of the risk associated with releases via COPS	0.00014 (0.014)
Containment Spray Systems Drywell head flooding	Elimination of drywell head overtemperature failures and reduction in releases from drywell head overpressure failures	0.00060 (0.06)
Prevention Concepts Additional service water loop	10% increase in reliability of HPCF, RCIC, RHR, LPCF	0.00016 (0.016)
AC Power Supplies Steam-driven turbine generator Alternate pump power source	80% reduction in the diesel generator common-mode failure rate Equivalent to adding a diverse RCIC system	0.00052 (0.052) 0.00069 (0.069)
DC Power Supplies Dedicated dc power supply	Factor of 10 increase in RCIC availability in LOOP and SBO sequences	0.00069 (0.069)
ATWS Capability ATWS-sized vent	Elimination of risk from ATWS (Case 9)	0.00030 (0.03)
System Simplification Reactor building sprays	10% reduction in risk from releases through the reactor building	0.00017 (0.017)
Core Retention Devices Flooded rubble bed	Elimination of sequences with core concrete interactions, except those with failure of containment heat removal (1% of Cases 1, 6, and 7)	0.000010 (0.001)

Table 2
Potential Design Improvements and Associated Costs (GE)

Modification		Estimated Cost (\$M)	Person-Sv (Person-Rem) Averted	Cost(\$M)/ Person-Sv (Person-Rem) Averted
1.	Accident Management			
1a.	Severe accident EPGs	0.60	0.00015 (0.015)	4,000 (40)
1b.	Computer-aided instrumentation	0.60	0.00010 (0.01)	>4,000 (>40)
1c.	Improved maintenance procedures and manuals	0.30	0.00016 (0.016)	1,870 (18.7)
2.	Decay Heat Removal			
2a.	Passive high-pressure system	1.7	0.00069 (0.069)	2,530 (25.3)
2b.	Improved depressurization	0.60	0.00042 (0.042)	1,430 (14.3)
2c.	Suppression pool jockey pump	0.12	0.00002 (0.002)	>4,000 (>40)
2d.	Safety-related condensate storage tank	1.0	0.00010 (0.01)	>4,000 (>40)
3.	Containment Capability			
3a.	Larger-volume containment	8.0	0.00150 (0.15)	>4,000 (>40)
3b.	Increased containment pressure capacity	12.0	0.0016 (0.16)	>4,000 (>40)
3c.	Improved vacuum breakers	0.10	0.0000004 (0.00004)	>4,000 (>40)
3d.	Improved bottom head penetration design	0.75	0.00057 (0.057)	1,320 (13.2)
4.	Containment Heat Removal			
4a.	Larger-volume suppression pool	8.0	0.000002 (0.0002)	>4,000 (>40)
5.	Containment Atmosphere Mass Removal			
5.a	Low-flow filtered vent	3.0	0.00014 (0.014)	>4,000 (>40)
7.	Containment Spray Systems			
7a.	Drywell head flooding	0.10	0.00060 (0.06)	170 (1.7)
8.	Prevention Concepts			
8a.	Additional service water loop	6.0	0.00016 (0.016)	>4,000 (>40)
9.	AC Power Supplies			
9a.	Steam driven turbine generator	6.0	0.00052 (0.052)	>4,000 (>40)
9b.	Alternate pump power source	1.2	0.00069 (0.069)	1,730 (17.3)
10.	DC Power Supplies			
10a.	Dedicated RHR dc power supply	3.0	0.00069 (0.069)	>4,000 (>40)
11.	ATWS Capability			
11a.	ATWS-sized vent	0.30	0.00030 (0.03)	1,000 (10)
13.	System Simplification			
13a.	Reactor building sprays	0.10	0.00017 (0.017)	590 (5.9)
14.	Core Retention Devices			
14a.	Flooded rubble bed	18.8	0.00001 (0.001)	>4,000 (>40)

CONGRESSIONAL LETTERS



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

The Honorable Dan Schaefer, Chairman
Subcommittee on Energy and Power
Committee on Commerce
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendments to the Commission's regulations for commercial nuclear power plants. Specifically, this proposed rule would add a new Appendix A to 10 CFR Part 52. When it is promulgated, this rule will certify the standard design of the U.S. Advanced Boiling Water Reactor (ABWR) submitted to the NRC for its review by GE Nuclear Energy.

These proposed amendments are necessary to fulfill the objectives of Part 52, which were to provide early resolution of licensing issues and foster standardization while allowing sufficient flexibility to incorporate advancements in technology and equipment. Those wishing to obtain a license to build or operate a U.S. ABWR will be able to do so by referencing the standard design certified in Appendix A to Part 52.

Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Representative Frank Pallone



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

The Honorable Lauch Faircloth, Chairman
Subcommittee on Clean Air, Wetlands, Private
Property and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendments to the Commission's regulations for commercial nuclear power plants. Specifically, this proposed rule would add a new Appendix A to 10 CFR Part 52. When it is promulgated, this rule will certify the standard design of the U.S. Advanced Boiling Water Reactor (ABWR) submitted to the NRC for its review by GE Nuclear Energy.

These proposed amendments are necessary to fulfill the objectives of Part 52, which were to provide early resolution of licensing issues and foster standardization while allowing sufficient flexibility to incorporate advancements in technology and equipment. Those wishing to obtain a license to build or operate a U.S. ABWR will be able to do so by referencing the standard design certified in Appendix A to Part 52.

Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Senator Bob Graham

PUBLIC ANNOUNCEMENT

NRC PROPOSES TO CERTIFY GE NUCLEAR ENERGY'S
ADVANCED BOILING WATER REACTOR DESIGN

The Nuclear Regulatory Commission is considering amending its regulations to certify the U.S. Advanced Boiling Water Reactor design developed by GE Nuclear Energy. Interested persons are invited to submit comments or to request an informal hearing before an NRC Atomic Safety and Licensing Board.

No application for a construction permit or combined license using the U.S. ABWR standard design has been filed with the NRC, and issuance of this regulation would not authorize construction of any specific new nuclear power plant.

However, if the Commission decides to issue the rule in final form and certify the U.S. ABWR design, a utility that wishes to build and operate a new nuclear power plant could choose to use the U.S. ABWR design and reference it in an application for a construction permit or combined license. Safety issues within the scope of the certified design would then not be subject to litigation in a formal public hearing, although site-specific environmental impacts associated with building and operating the plant at a particular location would be litigable.

The NRC approved the design of the U.S. ABWR in July. This design approval was necessary before the standard design could be certified in the regulations. If the Commission decides to issue a final rule certifying the U.S. ABWR design, it will be valid for 15 years.

The GE Nuclear Energy application for certification of the U.S. ABWR design was reviewed for compliance with applicable portions of the Commission's current regulations, except the U.S. ABWR would be exempt from five regulations (primarily requirements established after the Three Mile Island accident that are not needed for this design).

The proposed rule also contains additional requirements for the U.S. ABWR design (over and above requirements for the current generation of reactors). They include requirements for design features that would enable the U.S. ABWR to mitigate the effects of severe accidents if they occur.

Future applicants for a construction permit or combined license could make plant-specific changes to portions of the standard U.S. ABWR design by following the procedures set out in the proposed rule. The applicant or licensee would be required to maintain records of all such changes until the license is terminated.

Further details of the proposed rule are contained in a Federal Register notice published on _____. Interested persons are invited to submit written comments on the proposed regulation to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. The comments should be received by _____ (120 days following publication of the Federal Register notice).

Interested persons may also request an informal hearing before an NRC Atomic Safety and Licensing Board on matters related to the design certification rulemaking. The request should be submitted, within 120 days of the Federal Register notice, to the Secretary of the Commission at the above address.

The NRC staff plans to conduct a public meeting on this proposed rule approximately 60 days following publication of the Federal Register notice. The specific date, time and location of the meeting will be announced in the Federal Register.

Copies of U.S. ABWR design information submitted by GE Nuclear Energy are available for review and copying at the NRC Public Document Room, 2120 L Street, NW, Washington, DC.

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ATTACHMENT 2

DESIGN CERTIFICATION RULEMAKING PACKAGE
FOR
THE SYSTEM 80+ REACTOR DESIGN

NUCLEAR REGULATORY COMMISSION

10 CFR PART 52

RIN 3150 - AE87

Standard Design Certification for the
System 80+ Design

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC or Commission) proposes to approve by rulemaking a standard design certification for the System 80+ design. The applicant for certification of the System 80+ design was Asea Brown Boveri-Combustion Engineering (ABB-CE). The NRC is proposing to add a new appendix to 10 CFR Part 52 for the design certification. This action is necessary so that applicants or licensees intending to construct and operate a System 80+ design may do so by appropriately referencing the proposed appendix. The public is invited to submit comments on this proposed design certification rule (DCR) and the design control document (DCD) that is incorporated by reference into the DCR (refer to Sections IV and V). The Commission also invites the public to submit comments on the environmental assessment for the System 80+ design (refer to Section VI).

DATE: The comment period expires on [Insert date 120 days following the date of publication in the Federal Register]. Comments received after this date will be considered if it is practical to do so, but the Commission is only able to assure consideration for comments received on or before this date. In

addition, interested parties may request an informal hearing before the Atomic Safety and Licensing Board Panel, in accordance with 10 CFR 52.51, on matters pertaining to this design certification rulemaking. Requests for an informal hearing must be submitted by [Insert date 120 days following the date of publication in the Federal Register].

ADDRESSES: Mail written comments and requests for an informal hearing to: The Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Comments may also be delivered to 11555 Rockville Pike, Rockville, MD, between 7:30 am and 4:15 pm on Federal workdays.

Copies of comments received will be available for examination and copying at the NRC Public Document Room (PDR) at 2120 L Street NW. (Lower Level), Washington, DC. A copy of the environmental assessment and the design control document is also available for examination and copying at the PDR.

FOR FURTHER INFORMATION CONTACT: Harry S. Tovmassian, Office of Nuclear Regulatory Research, telephone (301) 415-6231, Jerry N. Wilson, Office of Nuclear Reactor Regulation, telephone (301) 415-3145, or Geary S. Mizuno, Office of the General Counsel, telephone (301) 415-1639, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

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I. BACKGROUND

On March 30, 1989, ABB-CE (formerly Combustion Engineering, Inc.) applied for certification of the System 80+ standard design with the NRC. The

application was made in accordance with the procedures specified in 10 CFR Part 50, Appendix O, and the Policy Statement on Nuclear Power Plant Standardization, dated September 15, 1987.

On May 18, 1989 (54 FR 15372), the NRC added 10 CFR Part 52 to its regulations to provide for the issuance of early site permits, standard design certifications, and combined licenses for nuclear power reactors. Subpart B of 10 CFR Part 52, established the process for obtaining design certifications. A major purpose of this rule was to achieve early resolution of licensing issues and to enhance the safety and reliability of nuclear power plants.

On August 21, 1989, ABB-CE requested that its application, originally submitted pursuant to 10 CFR Part 50, Appendix O, be considered as an application for design approval and subsequent design certification pursuant to 10 CFR 52.45. The application was docketed on May 1, 1991, and assigned Docket No. 52-002. Correspondence relating to the application prior to this date was also addressed to docket number STN No. 50-470 and Project No. 675. ABB-CE's application, the Combustion Engineering Standard Safety Analysis Report - Design Certification (CESSAR-DC) up to and including amendment W, is available for inspection and copying at the NRC Public Document Room.

The NRC staff issued a final safety evaluation report (FSER) related to the certification of the System 80+ design in August 1994 (NUREG-1462). The FSER documents the results of the NRC staff's safety review of the System 80+ design against the requirements of 10 CFR Part 52, Appendix O, and delineates the scope of the technical details considered in evaluating the proposed design. A copy of the FSER may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Mail Stop SSOP, Washington, DC 20402-9328 or the National Technical Information Service, Springfield, VA 22161. The final design

approval (FDA) for the System 80+ design was issued on July 26, 1994, and published in the Federal Register on August 2, 1994 (59 FR 39371).

Since the issuance of 10 CFR Part 52, the NRC staff has been working to implement Subpart B with issues such as the acceptability of using a two-tiered design certification rule and the level of design detail required for design certification. The NRC staff originally proposed a design certification rule for evolutionary standard plant designs in SECY-92-287, "Form and Content for a Design Certification Rule." On March 26, 1993, the NRC staff issued SECY-92-287A in which it responded to issues on SECY-92-287, which were put forth by the Commission, and to specific questions raised by Commissioner Curtiss in a letter dated September 9, 1992. Subsequently, the NRC staff modified the draft rule in SECY-92-287 to incorporate Commission guidance and published a draft-proposed design certification rule in the Federal Register on November 3, 1993 (58 FR 58665), as an Advanced Notice of Proposed Rulemaking (ANPR) for public comment. On November 23, 1993, the NRC staff discussed this ANPR in a public workshop entitled "Topics Related to Certification of Evolutionary Light Water Reactor Designs." All holders of operating licenses or construction permits were informed of the issuance of the ANPR and the planned public workshop through the issuance of NRC Administrative Letter 93-05 on October 29, 1993. Separate announcements of the workshop were also sent to the Union of Concerned Scientists, the Nuclear Information and Resource Service, the Natural Resources Defense Council, the Public Citizen Litigation Group, the Ohio Citizens for Responsible Energy (OCRE), and the State of Illinois Department of Nuclear Safety on October 18, 1993. An official transcript of the workshop proceedings is available in the PDR.

Rulemaking Procedures

10 CFR Part 52 provides for Commission approval of standard designs for nuclear power facilities (e.g., design certification) through rulemaking. In accordance with the Administrative Procedure Act (APA), Part 52 provides the opportunity for the public to submit written comments on the proposed design certification rule. However, Part 52 goes beyond the requirements of the APA by providing the public with an opportunity to request a hearing before the Atomic Safety and Licensing Board Panel in a design certification rulemaking. While Part 52 describes a general framework for conducting a design certification rulemaking, § 52.51(a) states that more detailed procedures for the conduct of each design certification will be specified by the Commission.

To assist the Commission in developing the detailed rulemaking procedures, the NRC's Office of General Counsel (OGC) prepared a paper, SECY-92-170 (May 8, 1992), which identified issues relevant to design certification rulemaking procedures, and provided OGC's preliminary analyses and recommendations with respect to those issues. SECY-92-170 was made public by the Commission, and a Commission meeting on this paper was held on June 1, 1992.

Thereafter, in SECY-92-185 (May 19, 1992), OGC proposed holding a public workshop for the purpose of facilitating public discussion on the issues raised in SECY-92-170 and obtaining public comments on those issues. The Commission approved OGC's proposal (See the May 28, 1992, Memorandum from Samuel J. Chilk to William C. Parler). Notice of the workshop was published in the Federal Register on June 9, 1992 (57 FR 24394). The notice also provided for a 30-day period following the workshop for the public to submit written comments on SECY-92-170. A transcript was kept of the workshop proceedings and placed in

the PDR. Nearly 50 non-NRC individuals attended the workshop; an additional eight persons requested copies of SECY-92-170 and workshop materials but did not attend. The workshop was organized in a panel format, with representatives from OCRE (Susan Hiatt), NUMARC (Robert Bishop), GE and Westinghouse - two design certification vendors (Marcus Rowden and Barton Cowan), the State of Illinois Department of Nuclear Safety (Stephen England), the State of New York Public Service Commission (James Brew), the Administrative Conference of the United States (William Olmstead), OGC, the NRC staff, and a moderator. Eleven written comments were received after the workshop, three from OCRE (OCRE August 1992 Comments; OCRE September 1992 Letter; OCRE October 1992 Letter), NUMARC, Winston and Strawn, the State of Illinois Department of Nuclear Safety, Westinghouse Energy Systems, the U.S. Department of Energy, Asea Brown Boveri-Combustion Engineering (ABB-CE), and AECL Technologies¹. Mr. Rowden submitted an additional comment on behalf of NUMARC which addresses proprietary information.

OGC's final analyses and recommendations for design certification rulemaking procedures were set forth in SECY-92-381 (November 10, 1992). This paper was prepared after consideration of the panel discussions at the public workshop and the written comments received after the workshop. On April 30, 1993, the Commission issued a Memorandum to the General Counsel which sets forth the Commission's determinations with respect to the procedural issues raised by the General Counsel's paper. Section V. below, "Comments and Hearings in the Design Certification Rulemaking," describes the procedures to be utilized in this design certification rulemaking.

¹AECL is the vendor for the CANDU 3 design, which is presently undergoing a pre-application design certification review by the NRC staff.

II. PUBLIC COMMENT SUMMARY AND RESOLUTION

The public comment period for the ANPR for rulemakings to grant standard design certification for evolutionary light water reactor designs expired on January 3, 1994. Six comment letters were received. Five comment letters were from the nuclear industry (i.e., vendors, utilities, and industry representatives) and one from a public interest organization. Most of the commenters addressed the nine topics upon which the NRC sought the public's views. The Commission has carefully considered all the comments and wishes to express its sincere appreciation of the often considerable efforts of the commenters.

In the following public comment summary and resolution and in the section-by-section discussion (Section III below), the discussion refers to "Commission approval" of NRC staff-proposed positions or recommendations. This should be understood as meaning the Commission's tentative approval of those positions or recommendations for purposes of: (i) the NRC staff's review of the System 80+ design certification application, and (ii) preparation of this notice of proposed rulemaking. The public may submit comments and request an informal hearing with respect to any of the "Commission approved" positions or recommendations (comments and hearings are discussed in further detail in Section V).

All of the commenters supported the basic concept of the design certification rulemaking approach including the two-tiered structure for design information. The Nuclear Management and Resources Council, which has since been subsumed within the Nuclear Energy Institute (NEI), commented for the nuclear

industry. GE Nuclear Energy, Westinghouse, and ABB-CE stated that they participated in the preparation of the NEI comments and fully supported them. The following is a summary and resolution of the public comments:

Topic 1 - Acceptability of a Two-Tiered Design Certification Rule Structure

Comment Summary. On behalf of the nuclear industry, NEI stated that a two-tiered structure to a design certification rule is practical and fully consistent with the intent and requirements of 10 CFR Part 52. OCRE stated that it fully supports the concept set forth in the ANPR provided that the Tier 2 information is subject to public challenge in the standard design certification and any associated hearing.

Response. Although a two-tiered structure for design certification rules was not envisioned or subsequently deemed necessary to implement standard design certifications under 10 CFR Part 52, the Commission approved the use of a two-tiered structure for a design certification rule in its SRM of February 15, 1991, on SECY-90-377, "Requirements for Design Certification Under 10 CFR Part 52," in response to a request from NEI dated August 31, 1990. Since then, the NRC staff has worked to develop a two-tiered rule that achieves industry's goal of issue preclusion, while retaining flexibility for design implementation, for a greater amount of information than was originally planned for design certification.

Tier 1 information is defined in Section 2(b) of the proposed rule and is treated as the certified information that is controlled by the change standards of 10 CFR 52.63. Tier 2 information is defined in Section 2(c) of the proposed rule and consists primarily of the information submitted in an application for

design certification. The information in the two tiers is interdependent. Therefore, an applicant for a construction permit, operating license, or combined license (COL) that references this design certification must reference both tiers of information. 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. All matters covered in each tier, including the determination of what information should be placed in each tier, are subject to public challenge in the design certification rulemaking and any associated hearing.

Topic 2 - Acceptability of the Process and Standards for Changing Tier 2 Information

Comment Summary. NEI concurs in the process and standards to be used by COL holders and applicants for evaluating and implementing changes to Tier 2 information via the so-called "§ 50.59-like" change process. However, NEI does not agree with the statement in the ANPR (A.13(d)(3)) that "changes properly implemented through this "§ 50.59-like" process cause a loss of finality relative to the affected portion of the design or are subject to subsequent legal challenge." NEI contends that these changes would be sanctioned through the design certification rule and that the only issue entertainable at the time of the COL licensing proceeding would be whether the licensee complied with the "§ 50.59-like" change process. Likewise, changes made subsequent to COL issuance could be challenged in the Part 52 proceeding before fuel-load authorization only on the basis that the change resulted in noncompliance with applicable acceptance criteria. However, NEI recognizes that changes from Tier

2 that require NRC approval would be subject to a hearing opportunity as specified in 10 CFR Part 52.

OCRE stated that it is important that applicant or licensee initiated changes to Tier 2 information made pursuant to the "§ 50.59-like" process will no longer be afforded the issue preclusion protection of 10 CFR 52.63. To do otherwise would turn the two-tiered system into a double standard in which utilities could deviate from the standard design but the public could not challenge these deviations. Permitting site-specific litigation of these changes would also serve to discourage changes.

Response. In order to implement the two-tiered structure for design certification rules, the Commission proposes a change process for Tier 2 information that has the same elements as the Tier 1 change process. Specifically, the Tier 2 change process has provisions for generic changes, plant-specific changes, and exemptions similar to those in 10 CFR 52.63. Although the NRC staff proposed that the backfitting standards for making generic changes to Tier 2 information should be less stringent than those for Tier 1 information, the Commission disapproved this proposal in its SRM on SECY-92-287A, dated June 13, 1993, and stated that "the backfitting standards of 10 CFR 52.63 should be applied for such changes to Tier 2." As a result, the NRC staff used the backfitting standards of 10 CFR 52.63 in the Tier 2 change process proposed in the ANPR, except that the additional factor regarding "any decrease in safety that may result from the reduction in standardization" was not adopted for plant-specific changes and exemptions in Section A.13(d) in order to achieve additional flexibility for Tier 2 information.

The Tier 2 change process also has a provision similar to 10 CFR 50.59 that allows changes to Tier 2 information by an applicant or licensee, without

prior NRC approval, subject to certain restrictions. The Commission approved this process in its SRM on SECY-90-377, dated February 15, 1991, provided "that such changes open the possibility for challenge in a hearing." The NRC staff followed the Commission's guidance in developing the process in ANPR A.13(d)(3) that allows certain changes to Tier 2 information, without prior NRC approval. This of the ANPR states that "Tier 2 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)." The NRC staff included this provision to meet Commission guidance and to restrain Tier 2 changes in order to maintain the benefits of standardization, as discussed in SECY-92-287. Also, changes may be challenged in individual COL proceedings since the changes depart from the design information approved in the design certification rulemaking. Therefore, the NRC Commission agrees with the OCRE position on issue preclusion and specifically invites comments on this provision (See Section IV).

Topic 3 - The Acceptability of a Tier 2 Exemption

Comment Summary. NEI supports the inclusion of the provision that an applicant or licensee may request, and the NRC may grant, an exemption to Tier 2 information. OCRE indirectly supports the Tier 2 exemption provision but recommends that the sentence "These Tier 2 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)." also be included in the Section A.13(d)(2) of the ANPR on exemptions from Tier 2 information, for clarity, and because 10 CFR 52.63(b)(1) does not mention the two-tiered system.

Response In SECY-92-287A, the NRC staff proposed the addition of an

exemption provision to the Tier 2 change process so that the change process for both tiers would have the same elements and to provide additional flexibility to applicants or licensees that reference a design certification rule. The Commission deferred its decision on an exemption to the Tier 2 change process in its SRM dated June 23, 1993, and requested the NRC staff to solicit public comments on this issue.

Because no commenter objected to the addition of a Tier 2 exemption process and NEI supported the proposal, the provision was retained in the proposed rule. However, OCRE proposed that Tier 2 exemptions lose issue preclusion consistent with Tier 1 exemptions. Because that is consistent with the NRC staff's approach to Tier 2 changes and the Commission's guidance in its SRM on SECY-90-377 (see response to topic #2), OCRE's proposal has been incorporated into the proposed rule.

The additional standard in the Tier 1 exemption process, which requires that "any decrease in safety that may result from the reduction in standardization caused by the exemption" outweighs the special circumstances in 10 CFR 50.12, and was not included in the Tier 2 exemption process because the Commission views Tier 2 information as more detailed descriptions of Tier 1 information that should have a less stringent change standard than Tier 1 and the industry requested additional flexibility for Tier 2 information. Therefore, the proposed Tier 2 change process uses the same standard that is used for Part 50 exemptions, namely 10 CFR 50.12. The Commission believes that the loss of issue preclusion for Tier 2 exemptions will help minimize the consequences of the loss of standardization caused by these exemptions.

Topic 4 - Acceptability of Using a Change Process, Similar to the One in

10 CFR 50.59 Applicable to Operating Reactors, Prior to the Issuance of a Combined License that References a Certified Design

Comment Summary. NEI concurs in the NRC's proposal to have the "§ 50.59-like" change process apply to both COL applicants and licensees.

Response. In its SRM on SECY-92-287A, dated June 23, 1993, the Commission approved the NRC staff's proposal to extend the use of the "§ 50.59-like" change-process for Tier 2 information to applicants that reference a certified design for the purposes of a proposed design certification rule. Because NEI and other commenters supported this proposal, this additional flexibility has been retained for the proposed rule.

Topic 5 - The Acceptability of Identifying Selected Technical Positions from the FSER as "Unreviewed Safety Questions" that Cannot Be Changed Under a "Section 50.59-Like" Change Process

Comment Summary. NEI commented that the proposal to predesignate changes to certain design aspects as constituting "unreviewed safety questions" is unnecessary and is tantamount to the creation of a third tier of information, which runs counter to the two-tier structure. NEI proposed that the selected Tier 2 material be designated, not broadly in the rule, but specifically in the SSAR/FSER and the DCD as requiring NRC staff notification before implementing the changes. NEI argued that at the time of notification, the NRC staff could decide whether the proposed change constitutes an "unreviewed safety question," and the applicant or COL holder would be prohibited from making the change without either NRC staff concurrence or a successful appeal of the NRC staff's determination. NEI also envisioned a time, subsequent to completion of designs and the inspections, tests, analyses, and acceptance criteria (ITACC), when the

change restriction for selected Tier 2 material will no longer be necessary. NEI further stated that, whether or not the Commission adopts NEI's proposal, the NRC staff should be limited to design areas discussed with plant designers when designations of "unreviewed safety questions" are made. Also, these special designations should be as narrow and specific as practicable to avoid the inadvertent broadening of this special category of Tier 2 design information and the excessive restrictions against change that would result.

Response. The NRC's proposal to predesignate certain Tier 2 information that cannot be changed without prior NRC approval does not create a third tier of information or conflict with the two-tiered rule structure. In fact, this so-called Tier 2* information was created as a consequence of industry's implementation of the two-tiered rule structure. Specifically, industry's desire to minimize the amount of information in Tier 1 and to use design acceptance criteria in lieu of design information in certain areas resulted in the need to identify significant Tier 2 information that could not be changed by an applicant or licensee without prior NRC approval. The previous reference to "identified unreviewed safety questions" in the ANPR was made to indicate that the process for changing the so-called Tier 2* information would be the same as for changing other Tier 2 information that an applicant or licensee determines to constitute an unreviewed safety question. Therefore, there is no third tier of information. Rather, some Tier 2 information cannot be changed without prior NRC approval and the remainder can. This is no different than the information in a Final Safety Analysis Report relative to the process in 10 CFR 50.59.

The Commission agrees with NEI that it would be clearer to future users of the certified design if the specific information that has been designated as requiring prior NRC approval (Tier 2*) is identified in the DCD rather than

summarized in the design certification rule (DCR). However, the requirement for prior NRC approval does need to be specified in the DCR for the Tier 2 change process. Therefore, the NRC instructed the applicants to identify the Tier 2* information in the DCD.

In response to NEI's request, the DCR will not identify the Tier 2* information as an unreviewed safety question because only prior NRC approval is required. Therefore, the Tier 2 change process has been revised to state that Tier 2* information identified in the DCD cannot be changed without prior NRC approval. Although Tier 2* changes may not result in unreviewed safety questions, the public will be afforded an opportunity to challenge the changes (see response to topic #2). The Commission also agrees that the predesignation of some of the Tier 2* information can expire when the plant first achieves 100% power while other Tier 2* information must remain in effect throughout the life of the plant that references the DCR. This is because there is sufficient information in Tier 1 to control changes after the plant is completed. The appropriate expiration point is designated in the DCD.

The NEI proposal to require notification of the NRC rather than requiring NRC approval prior to changing the Tier 2* information would create an unnecessary burden on the NRC in the Tier 2 change process. The Commission has already determined that the predesignated Tier 2 information is significant and cannot be changed before NRC approval. Therefore, the Commission has not adopted the "notification" proposal. Also, the designation of Tier 2* information is not an excessive restriction on the change process. Rather, it compensates for industry's request to minimize the amount of information in Tier 1.

Topic 6 - Need for Modifications to 10 CFR 52.63(b)(2) If the Two-Tiered Structure for the Design Certification Rule is Approved

Comment Summary. OCRE commented that modifications to § 52.63 are not necessary because the design certification rules would also become regulations. NEI commented that changes to 10 CFR Part 52 are not needed at this time but that some changes to Part 52 may be identified as appropriate for future consideration based on experience with the initial design certifications.

Response. When Part 52 was written, § 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). Now that the Commission has decided to implement a two-tiered rule structure as described in the response to Topic #1, the two-tiered change process applies to all information referenced by the design certification rule. Therefore, there does not appear to be a need for § 52.63(b)(2) in a two-tiered rule structure.

In the absence of any perceived need for changes to 10 CFR 52.63(b)(2) to accommodate the two-tiered concept in design certification, the Commission does not intend to modify 10 CFR Part 52 at this time. However, as NEI suggests, the Commission is evaluating the need for changes to Part 52 as it gains experience with the initial design certification reviews.

Topic 7 - Whether the Commission Should Either Incorporate or Identify the Information in Tier 1 or Tier 2 or Both in the Combined License

Comment Summary. On the question of whether Tier 1 or Tier 2 information should be incorporated in the combined license (COL) or identified in the COL, NEI stated that this question need not be resolved for design certification purposed but provides two alternatives for future NRC consideration.

Alternative one would be to incorporate Tier 1 information and identify Tier 2 information in the COL. The second alternative would be to incorporate both tiers of information in the rule, provided that the Tier 2 change provisions are incorporated in the rule as well.

OCRE stated that both Tier 1 and Tier 2 information should be incorporated in the COL because both tiers contain important design information.

Response. The NRC is deferring the decision on this issue because resolution of this issue is not needed to develop a design certification rule. However, because the commenters all supported incorporation of both tiers of information, the NRC staff will evaluate that option for a combined license under Subpart C of 10 CFR Part 52.

Topic 8 - Acceptability of Using Design Specific Rulemakings Rather Than Generic Rulemaking for the Technical Issues Whose Resolution Exceeds Current Requirements

Comment Summary. NEI, GE Nuclear Energy, and Westinghouse Electric Corporation took exception with the NRC position on the issue of designating severe accident and technical requirements, beyond those in current regulations, as "applicable regulations" in the design certification rule. NEI stated that "Commission approved NRC staff positions will be reflected in a design certification rule by means of design provisions contained in Tier 1 and Tier 2 of the DCD incorporated in the rule." NEI argued that the NRC staff's proposed approach would result in needless duplication, complexity, and delay because matters that have been agreed to in detail would then be formulated in broadly stated positions requiring another round of extensive discussions to reach agreement in a process equivalent to a series of complex, discrete rulemakings.

In addition, NEI stated that these "broadly stated, free standing applicable regulations carry the potential for new and diverse interpretations by the NRC staff during the life of the design certification." These interpretations may be at odds with the understandings that translated into specific Tier 1 and Tier 2 requirements in the DCD. GE Nuclear Energy reiterated these comments but added that "The course proposed by the NRC staff would enormously complicate pre-rulemaking preparation, the conduct of the rulemakings themselves and COL licensing and post-licensing facility construction and operation. It would, moreover, impose schedule delays and generate needless duplication, if not outright conflicts." Also, NEI saw little difference between the proposal to incorporate applicable regulations in design certification rules and the similar effect of proceeding with generic severe accident rulemaking.

OCRE stated that the resolution of technical issues whose resolution exceeds current requirements will likely be design-specific and therefore, it may make little difference whether the rulemakings are design-specific or generic. OCRE further stated that, if the NRC wants all plants constructed after a certain date to incorporate certain design features or otherwise address certain technical issues, then a generic rulemaking may be the safest and most cost-effective way to accomplish this goal. OCRE also noted that a generic rule would cover an applicant that might decide not to use a standard certified design.

Response. The Commission has used design-specific rulemaking rather than generic rulemaking for the selected technical and severe accident issues that go beyond current requirements for light-water reactors (LWRs). The Commission adopted this approach, early in the review process, because it believed that the new requirements would be design-specific, as OCRE stated. Also, the NRC was

concerned that generic rulemakings would cause significant delay in the design certification reviews. The Commission approved this approach in its SRM on SECY-91-262, dated January 28, 1992, and has continued to support this approach for evolutionary LWRs, as stated in its SRM on SECY-93-226, dated September 14, 1993. The Commission has deferred its decision on the need for generic rulemaking for advanced LWRs.

Both the industry and OCRE concluded that there would be little difference in the requirements for the certified designs, regardless if the approach was generic or design-specific. The Commission agrees that at the conclusion of the design certification rulemaking the effect of the new regulations is basically the same but that the specific wording of the regulations may have been different if generic rulemaking was used.

In implementing the goals of 10 CFR Part 52 and the Commission's Severe Accident Policy Statement (50 FR 32138; August 8, 1985), the NRC staff set out to achieve a higher level of safety performance for both evolutionary and passive LWR designs in the area of severe accidents and in other selected areas. The NRC staff proposed new requirements to implement these goals in various Commission papers, such as SECY-90-016 and SECY-93-087. The NRC staff then selected the applicable requirements for each evolutionary design and evaluated the design information that describes how those requirements were met in the FSERs for the U.S. ABWR and System 80+ designs. In the proposed rule for each design, the NRC has identified these requirements as applicable regulations in order to specify the requirements that were applicable and in effect at the time the certification was issued for the purposes of §§ 52.48, 52.54, 52.59, and 52.63.

These applicable regulations, which were identified in each FSER, are set forth in the design certification rule, with minor editing, to achieve codification through the design certification rulemaking. These codified regulations, which supplement the list of regulations in § 52.48, become part of the Commission's regulations that are "applicable and in effect at the time the certification was issued." Without this complete list of applicable regulations, the NRC staff could not perform reviews in accordance with §§ 52.59 and 52.63. By codifying these requirements, the NRC intends to make it clear that for the purpose of renewal of a certified design under § 52.59, these requirements are part of the applicable regulations in effect at the time that the design certification was first issued. The NRC also intends to make it clear that the Commission may, pursuant to § 52.63(a)(1) and (3), impose modification of Tier 1 information or to issue a plant-specific order, respectively, to ensure that the certified design or the plant complies with the applicable regulations of the design certification rule. The rationale is that the Commission could not, without re-reviewing the merits of each position, impose a change to Tier 1 information or issue a plant-specific order merely because the modification was necessary for compliance with a matter involving these proposed requirements. Also, the Commission would not have a complete baseline of regulations for evaluating proposed changes from the public, applicants, or licensees, thereby degrading the predictability of the licensing process.

The codification of these proposed requirements, in reference to § 52.48, is also necessary for two other reasons. First, it serves as a basis for obtaining public comment on the proposed adoption of the requirements as applicable regulations. Second, it provides confirmation that the requirements

are being adopted by the Commission as applicable regulations under § 52.54 for the design certification being approved. 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 proposed requirements used during its review of the design. This is because the requirements are not "applicable standards and requirements of the ...Commission's regulations" without further Commission action under § 52.54.

By identifying the regulations that are applicable to each design, the Commission has improved the stability and predictability of the licensing process. By approving the design information that describes how these regulations were met, the Commission has minimized the potential for a differing interpretation of the regulations. Finally, the NRC staff told NEI in a meeting on April 25, 1994, and in a letter dated July 25, 1994, that the industry-proposed alternative to applicable regulations was unacceptable. The NRC staff stated that design information cannot function as a surrogate for design-specific (applicable) regulations because this information describes only one method for meeting the regulation and would not provide a basis for evaluating proposed changes to the design information. Therefore, consideration of the comments on Topic #8 has not altered the Commission's decision to proceed with design-specific rulemaking for the proposed requirements and to publish the appropriate applicable regulations in each design certification rule.

Topic 9 - The Appropriate Form and Content of a Design Control Document (DCD).

Comment Summary. Concerning the form and content of the DCD, NEI envisioned a document that consisted of three parts including an introductory

section, Tier 1 information, and Tier 2 information. NEI also proposed an algorithm that described the industry's view of the contents of a DCD.

NEI stated that, based on its interactions with the NRC staff on the guidance for preparing a DCD, two main issues have emerged. The first issue is the nature and treatment for rulemaking purposes of secondary references contained in the DCD. At issue is the extent to which references to codes, standards, Regulatory Guides, etc. need to be explicitly "incorporated by reference" in specific design certification rules (DCRs). It is industry's position that the burden of incorporating these secondary references into the rule would outweigh the increase in regulatory certainty and predictability that such an effort would provide. The second issue relates to the regulatory significance of information contained in the DCD and, in particular, design Probabilistic Risk Assessment (PRA) information. Specifically, NEI is concerned with the inclusion of the design PRA in the DCD and a perceived requirement to use the PRA to support the "50.59-like" change process.

Response. As defined in SECY-92-287, the DCD is the master document that contains the Tier 1 and 2 information referenced by the design certification rule. The NRC staff has had several meetings with the design certification applicants on the preparation of a DCD and provided guidance to the applicants in letters dated August 26, 1993; August 3 and 5, 1994; and October 4, 1994. Although the Commission agrees with NEI on the basic form of the DCD, it does not agree with NEI's proposed algorithm on the contents of a DCD.

Because the DCD is the master reference document, it should, to the extent possible, retain as much of the applicant's standard safety analysis report (SSAR), as required in 10 CFR 52.47. Due to the requirement that all information incorporated in the rule be publicly available, proprietary and

safeguards information cannot be included in the DCD. Also, the NRC concluded that the detailed methodology and quantitative portions of the design PRA do not need to be included in the DCD but the assumptions, insights, and discussions of PRA analyses must be retained in the DCD. The NRC also decided that COL applicants and licensees will be encouraged, but not required, to use the PRA to support the change process. This position was predicated in part upon NEI's acceptance, in conceptual form, of a future generic rulemaking that requires that a COL applicant or holder to have a plant-specific PRA that updates and supersedes the design PRA to account for site-specific and detailed as-built aspects of the plant. The Commission approved the requirement for a plant-specific PRA in its SRM on SECY-94-182, "Probabilistic Risk Assessment (PRA) Beyond Design Certification," in approving the development of a generic "Operational Rule" that would apply to all COL applicants and holders. The remainder of the applicant's SSAR, including all of the assumptions, issue resolutions, and safety analyses, should be retained in the DCD.

With regard to NEI's concern with secondary references, the NRC staff met with NEI on January 6, 1994, and issued a letter to NEI on May 3, 1994, that documented an agreement with the industry on the resolution of this issue. The agreement states that combined license (COL) applicants and licensees who reference a DCR will treat these secondary references as requirements, in the context that they are described in the documents referenced in the DCD. However, these secondary references will not be incorporated by reference in the DCR, and thus there is no issue preclusion for secondary references. With the above stated guidance, the NRC believes that the appropriate form and content of a DCD has been defined.

III. SECTION-BY-SECTION DISCUSSION OF DESIGN CERTIFICATION RULE

Pursuant to 10 CFR Part 52, Subpart B, the NRC has been working for some time to develop a rule that will achieve the Commission's goals for standard design certifications. Therefore, this proposed rule seeks to achieve the early resolution of safety issues and to enhance the safety and reliability of nuclear power plants. The Commission also expects to achieve a more predictable and stable licensing process through the certification of standard designs by rulemaking. An applicant for a combined license (COL) that references a design certification rule (DCR) must meet the requirements in the DCR and in the design control document that is incorporated by reference in the DCR.

The NRC staff's first proposal of a standard design certification rule was provided in Enclosure 1 to SECY-92-287, dated August 18, 1992. This proposal was modified based on Commission guidance, and an updated version was published in Appendix 2 to the ANPR. The proposed rule in this Federal Register notice has the same basic form and content as the ANPR version, but there has been some reorganization of the contents. The following discusses the purpose and key aspects of each of the rule and also discusses issues raised on those section that are not covered in the public comment summary. Changes made to the ANPR version of the proposed rule for the sake of clarity, brevity, consistency, or organization are not discussed below. All references to the proposed rule are to the provisions in proposed Appendix B to part 52.

A. Scope

The purpose of Section 1 of the proposed rule entitled, "Scope," is to identify the standard plant design that is to be approved by this design certification rule. The applicant for certification of the design is also identified in this. While the design certification applicant does not have special rights pursuant to this rule, the implementation of 10 CFR 52.63(c) depends on whether an applicant for a COL contracts with the design certification applicant to provide the certified design. If the COL applicant does not use the design certification applicant to provide the design, then it may have to meet the requirements in 10 CFR 52.63(c). Also, the proposed rule imposes a requirement on the design certification applicant in Section 9(a)(1). Therefore, identification of the design certification applicant is necessary to implement this rule.

Because the requirements of 10 CFR 52.63(c) apply to an applicant for a COL, the NRC proposes that this requirement be added to 10 CFR Part 52, Subpart C, specifically to a new Section 10 CFR 52.79(e). The NRC requests comments on the desirability of making this change to 10 CFR Part 52 (refer to Section IV).

B. Definitions

The terms Tier 1, Tier 2, and Tier 2* are defined in Section 2 of the proposed rule entitled, "Definitions," because these concepts were not envisioned at the time that 10 CFR Part 52 was developed. The design certification applicants and the NRC used these terms in implementing the two-tiered rule structure that was proposed by industry after the issuance of Part 52 (refer to discussion on Topic #1). The design control document (DCD)

contains both the Tier 1 and 2 information, along with an introduction. After the issuance of the ANPR, the phrase Tier 2* was added to the list of definitions. Some of the information in Tier 2 requires special treatment in the change process and was commonly referred to as Tier 2* during the design review. Therefore, the Commission believes that it would be useful to define and use this phrase in the proposed rule. Further information on changes to or departures from information in the DCD is provided below in the discussion on Section 8, "Change Process." The NRC requests suggestions on other words or phrases that may need to be identified in this rule (refer to Section IV).

C. [Reserved]

The purpose of Section 3, "Information collection requirements," in the proposed rule was originally intended to provide the citation for the control number which has been assigned by the Office of Management and Budget when it approved the information collection requirements in this rulemaking. Because this citation has been placed in § 52.8, Section 3 to the rule is no longer necessary.

D. Contents of the design certification

Section 4 of the proposed rule entitled, "Contents of the design certification," identifies the design-related information that is incorporated by reference into this rule (4(a)) and includes some related provisions of the proposed rule (4(b) and (c)). Both tiers of design-related information have been combined into a single document, called the design control document (DCD),

in order to effectively control this information and facilitate its incorporation into the rule by reference (refer to Topic #9 for discussion on the DCD). The DCD was prepared to meet the requirements of the Office of the Federal Register (OFR) for incorporation by reference (1 CFR Part 51). Section 4(a) of this proposed rule would incorporate the DCD by reference upon approval of the Director, OFR. The legal effect of incorporation by reference is that the material is treated as if it were published in the Federal Register. This material, like any other properly issued regulation, has the force and effect of law.

An applicant for a construction permit or COL that references this design certification rule must conform with the requirements in the proposed rule and the DCD. The master DCD for this design certification will be archived at NRC's central file with a matching copy at OFR. Copies of the up-to-date DCD will also be maintained at the NRC's Public Document Room and Library. Questions concerning the accuracy of information in an application that references this design certification will be resolved by checking the master DCD in NRC's central file. If a generic change (rulemaking) is made to the DCD pursuant to the change process in Section 8 of the proposed rule, then at the completion of the rulemaking the NRC will change its copies of the DCD and notify the OFR and design certification applicant to change their copies.

The applicant for this design certification rule is responsible for preparing the DCD in accordance with NRC and OFR requirements and maintaining an up-to-date copy pursuant to Section 9(a)(1) of the proposed rule. Plant-specific changes to and departures from the DCD will be maintained by the applicant or licensee that references this design certification pursuant to

Section 9(a)(2) of the proposed rule. In order to meet the requirements of OFR for incorporation by reference, the originator of the DCD (design certification applicant) must make the document available upon request after the final design certification rule is issued. Therefore, the proposed rule states that copies of the DCD can be obtained from the applicant or an organization designated by the applicant. The applicant for this design certification has stated that it plans to request distribution of its DCD by the National Technical Information Service (NTIS). If the applicant selects an organization, such as NTIS, to distribute the DCD, then the applicant must provide that organization with an up-to-date copy. A copy of the DCD must also be made available at the NRC and OFR.

The DCD contains an introduction that explains the purpose and uses of the DCD and two tiers of design-related information. The significance of designating design information as Tier 1 or Tier 2 is that different change processes and criteria apply to each tier, as explained below in Section H, "Change Process." The introduction to the DCD 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.

The Tier 1 portion of the design-related information contained in the DCD is **certified** by this rule. This information consists of an introduction to Tier 1, the certified design descriptions and corresponding inspections, tests, analyses, and acceptance criteria (ITAAC) for systems and structures of the

design, design material applicable to multiple systems of the design, significant interface requirements, and significant site parameters for the design. The NRC staff's evaluation of the Tier 1 information, including a description of how this information was developed is provided in Section 14.3 of the FSER.

The information in the Tier 1 portion of the DCD was extracted from the detailed information contained in the application for design certification. The Tier 1 information addresses the most safety-significant aspects of the design, and was organized primarily according to the structures and systems of the design. Additional design material and related ITAAC is also provided in Tier 1 for selected design and construction activities that are applicable to multiple systems of the design. The Tier 1 design descriptions serve as design commitments for the lifetime of a facility referencing the design certification, and the ITAAC verify that the as-built facility conforms with the approved design and applicable regulations. In accordance with 10 CFR 52.103(g), the Commission must find that the acceptance criteria in the ITAAC are met before operation. After the Commission has made the finding required by 10 CFR 52.103(g), the ITAAC do not constitute regulatory requirements for subsequent modifications. However, subsequent modifications to the facility must comply with the certified design material, unless changes are made in accordance with the change process in Section 8 of this proposed rule.

The Tier 1 interface requirements are the most significant of the interface requirements for the standard design, which were submitted in response to 10 CFR 52.47(a)(1)(vii), that must be met by the site-specific portions of a facility that references the design certification. The Tier 1 site parameters are the most significant site parameters, which were submitted in response to 10

CFR 52.47(a)(1)(iii), that must be addressed as part of the application for a construction permit or COL.

Tier 2 is the portion of the design-related information contained in the DCD that is **approved** by this rule but is not certified. The change process defines the procedural differences between Tier 1 and 2. Changes to or departures from the certified design material (Tier 1) must comply with Section 8(a) of this proposed rule. Changes to or departures from the approved information (Tier 2) must comply with Section 8(b) of this proposed rule. Tier 2 includes the information required by 10 CFR 52.47 and 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 the more detailed Tier 2 information provides a sufficient method, but not the only acceptable method, for complying with the more general design requirements included in Tier 1. A supplementary description of Tier 2 information is provided in the DCD introduction. If an applicant or licensee used methods other than those described in Tier 2, then the alternative method would be open to staff review and a possible subject for a hearing.

When completing the design information for a plant, an applicant for a COL must conform with all of the requirements in the DCD, unless the information in the DCD is changed pursuant to the process in Section 8 of this proposed rule. Accordingly, 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 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, as set forth

in a letter from Dennis Crutchfield of the NRC to Joe Colvin of the Nuclear Energy Institute, dated May 3, 1994.

An applicant for a construction permit or COL that references this proposed rule must also describe those portions of the plant design which are site-specific, and demonstrate compliance with the interface requirements, as required by 10 CFR 52.79(b). The COL applicant does not need to conform with the conceptual design information in the DCD that was provided by the design certification applicant in response to 10 CFR 52.47(a)(1)(ix). The conceptual design information was required as examples of site-specific design features to facilitate the design certification review, and it is neither Tier 1 nor 2. The introduction to the DCD identifies the location of the conceptual design information and explains that this information is not applicable to a COL application.

An applicant must address COL Action Items, which are identified in the DCD as COL License Information, in its COL application. The COL Action Items (COL License Information) identify matters that need to be addressed by an applicant or licensee that references the design certification, as required by 10 CFR 52.77 and 52.79. A further explanation of the status of the COL License Information is provided in the DCD introduction. Also, the detailed methodology and quantitative portions of the design-specific probabilistic risk assessment (PRA), as required by 10 CFR 52.47(a)(1)(v), was not included in the DCD. The NRC agreed with the design certification applicant's request to delete this information because conformance with the deleted portions of the PRA is not required. The Commission's position is also predicated in part 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.

The application for design certification contained proprietary and safeguards information. This information was part of the NRC staff's bases for its safety findings in the FSER. However, because of OFR requirements, this information could not be included in the DCD. Therefore, the proprietary and safeguards information, or its equivalent, that was provided in the design certification application but not included in the DCD, must be included as part of a COL application. The Commission considers this information to be requirements for plants that reference this rule. Since this information was not included in the DCD, or otherwise approved by OFR for incorporation by reference, it would not have issue preclusion in a construction permit or COL proceeding.

There is other information that is within the scope of the certified design (i.e., as-built, as-procured, and evolving technology design information) that must be provided as part of a COL application. This detailed design information must be completed in accordance with the requirements in the DCD and the acceptance criteria in ITAAC, including design acceptance criteria (DAC). Since the Tier 1 and 2 information is solely contained within the DCD, the remainder of the design-related information that is developed by a COL applicant or holder that references this proposed rule will not be either Tier 1 or 2 information, whether it is within the scope of the design certification or not. Therefore, the change process in Section 8 of this proposed rule will not control this COL information. Although the change process for this COL information does not need to be developed until a COL application is submitted,

the Commission is interested in the public's view on how this information should be controlled (refer to Section IV).

The purpose of Section 4(b) of this proposed rule is to ensure that an applicant that references this design certification references both tiers of information in the DCD. The two tiers of information were developed together and both tiers of information are needed to complete the design of a plant that references the rule. For example, the ITAAC in Tier 1 contains not only the acceptance criteria for verifying that the as-built plant conforms with the approved design, but it also contains various design processes with acceptance criteria (DAC), for completing selected areas of the plant design. The DAC are described in Section 14.3 of the SSAR and FSER. The 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. 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. (see Section J for further discussion)

The applicant for design certification initially prepared the DCD to be consistent with the SSAR and the NRC staff's FSER. The applicant for design certification made some corrections and clarifications to the DCD since the completion of the SSAR and issuance of the FSER. If there is an inconsistency between the SSAR and the FSER, or between either of these documents and the DCD, then the DCD is the controlling document. That is the purpose of Section 4(c) of this proposed rule.

E. Exemptions and applicable regulations

The purpose of Section 5 of the proposed rule entitled, "Exemptions and applicable regulations," is to identify the complete set of regulations that were applicable and in effect at the time the design certification was issued for the purposes of 10 CFR 52.48, 52.54, 52.59, and 52.63. In accordance with 10 CFR 52.48, the NRC staff used the technically relevant regulations (safety standards) in 10 CFR Parts 20, 50, 73, and 100 in performing its review of the application for design certification. The effective date of these applicable regulations is the date of the FSER, as set forth in Section 5(b) of the proposed rule. During its review of the application for design certification, the NRC staff identified certain regulations for which application of the regulation to the standard design would not serve or was not necessary to achieve the underlying purpose of the regulation. These proposed exemptions to the NRC's current regulations are identified in Section 5(a) of this proposed rule. The basis for these exemptions is provided in the FSER.

In implementing the goals of 10 CFR Part 52 and the Commission's Severe Accident Policy Statement, the NRC staff set out to achieve a higher level of safety performance for both evolutionary and passive LWR standard designs in the area of severe accidents and in other selected areas. As a result, the NRC staff proposed new requirements in various Commission papers, such as SECY-90-016 and SECY-93-087, to be used in the design certification review and treated as applicable regulations in the design certification rulemaking (refer to discussion on Topic #8). The bases for these requirements are set forth in SECY-90-016 and SECY-93-087. The Commission approved the use of these proposed regulations for purposes of the design certification review in the respective

SRMs. These proposed regulations deviated from or were not embodied in current regulations applicable to the standard design. The NRC staff then selected proposed regulations that were applicable to the design under review and reviewed the design pursuant to these applicable regulations. The FSER identifies the applicable regulations that were used and describes how these regulations were met by the design-related information in the SSAR. The Commission approved the evaluation of the design pursuant to the applicable regulations in its approval to publish the FSER.

These proposed applicable regulations are identified in Section 5(c) of this proposed rule to achieve codification through the design certification rulemaking. The proposed applicable regulations in Section 5(c) are substantively the same as those in the FSER but have been edited for clarity. These codified requirements, which supplement the regulations in Section 5(b), will become part of the Commission's regulations that were "applicable and in effect at the time the certification was issued," if the Commission adopts them in the final design certification rule. The codification of these additional requirements, in reference to 10 CFR 52.48, is necessary for two reasons. First, it serves as a basis for obtaining public comment on the adoption of the proposed requirements as applicable regulations. Second, it provides confirmation that the requirements are being adopted by the Commission as applicable regulations under § 52.54 for the design certification being approved.

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 requirements used during its review of the design. This is because the proposed requirements, without further Commission

action, could be argued as not being "applicable standards and requirements of the ...Commission's regulations" under § 52.54. Also, without codification of the applicable regulations, the NRC could not perform its reviews in accordance with §§ 52.59 and 52.63. By codifying these requirements, the NRC intends that for renewal of a certified design under § 52.59, these requirements are part of the applicable regulations in effect at the time that the design certification was first issued.

The Commission may, pursuant to § 53.63(a)(1) and (3), impose a modification of Tier 1 information or issue a plant-specific order, respectively, to ensure that the certified design or the plant complies with the applicable regulations of the design certification rule. The rationale is that the Commission could not, without re-reviewing the merits of each position, impose a change to Tier 1 information or issue a plant-specific order merely because the modification was necessary for compliance with a matter involving these requirements. Also, the Commission would not have a complete list of regulations for use in evaluating requested changes from the public, applicants, or licensees, thereby degrading the predictability of the licensing process.

By identifying the regulations that are applicable to each design, the Commission has improved the stability and predictability of the licensing process. By approving the design information that describes how these regulations were met, the Commission has minimized the potential for a differing interpretation of the regulations. Finally, the NRC rejected NEI's proposed alternative to applicable regulations in a meeting on April 25, 1994, and in a letter dated July 25, 1994. NEI's proposal to use design information as a surrogate for design-specific (applicable) regulations is not workable for proposed changes because the design information only represents one way of

implementing a regulation. The NRC would need the regulation for the design feature in order to evaluate a proposed change to the design information.

F. Issue resolution for the design certification

The purpose of Section 6 of the proposed rule entitled, "Issue resolution for the design certification," is to identify the issues that are considered resolved, if the Commission adopts a final design certification rule and therefore, these issues receive issue preclusion within the scope and intent of 10 CFR 52.63(a)(4). Specifically, all nuclear safety issues arising from the Atomic Energy Act that are associated with the information in the NRC staff's FSER or the applicant's DCD are resolved within the meaning of § 52.63(a)(4). All issues arising under the National Environmental Policy Act of 1969 associated with the information in the NRC staff's environmental assessment or the severe accident design alternatives in the applicant's Technical Support Document are also resolved within the scope and intent of § 52.63(a)(4). The issues that are associated with information that is not included in the DCD, such as proprietary information, do not have issue preclusion within the meaning of 10 CFR 52.63(a)(4).

G. Duration of the design certification

The purpose of Section 7 of the proposed rule entitled, "Duration of the design certification," is in part to specify the time period during which the standard design certification may be referenced by an applicant for a construction permit or COL, pursuant to 10 CFR 52.55. This section of the rule

also states that the design certification remains valid for an applicant or licensee that references the design certification until their application is withdrawn or their license expires. Therefore, if an application references this design certification during the 15-year period, then the design certification rule continues in effect until the application is withdrawn or the license issued on that application expires. Also, the design certification continues in effect for the referencing license if the license is renewed. The Commission intends for the proposed rule to remain valid for the life of the plant that references the design certification to achieve the benefits of standardization and licensing stability. This means that rulemaking changes to or plant-specific departures from information in the DCD must be made pursuant to the change process in Section 8 of this proposed rule for the life of the plant.

H. Change process

The purpose of Section 8 of this proposed rule entitled, "Change process," is to set forth the process for requesting rulemaking changes to or plant specific departures from information in the DCD. The Commission has developed a more restrictive change process than for plants that were licensed pursuant to 10 CFR Part 50, in order to achieve a more stable licensing process for applicants and licensees that reference a design certification rule. The change process in Section 8 is substantively the same as the process proposed in the ANPR.² As a result, Section 8(a) provides the process for changing Tier 1

²This change process has been reorganized for clarity and conformance to the two-tiered rule structure, and to distinguish between generic changes to Tier 1 and 2 information, which are accomplished via rulemaking, and plant-specific

information and Section 8(b) provides the process for changing Tier 2 information. The change process for Tier 1 information uses the change process developed by the Commission in the Part 52 rulemaking for certified design-related information. Therefore, the provisions in Section 8(a) of the proposed rule simply refer to the appropriate Sections in 10 CFR 52.63. A description of the Tier 1 information that is controlled by Section 8(a) is provided in the above discussion on contents of the design certification (III.D).

As discussed in Topic #2, the NRC developed a change process for Tier 2 that has the same elements as the Tier 1 change process. Specifically, the Tier 2 change process in Section 8(b) has provisions for generic changes, plant-specific orders, and exemptions similar to those in 10 CFR 52.63, but some of the standards for plant-specific orders and exemptions are different. The standards that must be met in order to justify a generic change to either Tier 1 or 2 information are the same. When NEI proposed a two-tiered structure for design certification rules in its letter of August 31, 1990, it also stated that "NRC backfits involving matters described in the first tier would be governed by the provisions of § 52.63, whereas § 50.109 would govern backfitting as respects the second tier." As a result, the NRC staff used the backfit standards in § 50.109 for generic changes to Tier 2 in its proposed design certification rule in SECY-92-287. Subsequently, in a letter dated October 5, 1992, NEI changed its position and agreed with the Commission that the standard for generic changes to Tier 2 should be the same as the Tier 1 standard. This issue is discussed further in SECY-92-287A, dated March 26, 1993. Therefore, Section 8

departures from Tier 1 and 2 information which may be accomplished by the process defined in Section 8 of this proposed rule. For brevity, this SOC refers to both aspects as constituting the "change process" for this design certification rule.

of this proposed rule uses the same standards for generic changes to both Tier 1 and 2 information.

Although the process in Section 8 for plant-specific orders and exemptions is the same for Tier 1 and 2 information, the standards are different. In order to preserve the benefits of standardization, which is one of the important goals of design certification, the Commission proposes in Section 8(b)(3) that plant-specific orders or exemptions from Tier 1 information must consider whether the special circumstances which § 50.12(a)(2) required to be present outweigh any decrease in safety that may result from the reduction in standardization, as required in 10 CFR 52.63(a)(3). The Commission is not proposing to adopt this additional consideration for plant-specific orders or exemptions from Tier 2 information, in order to achieve additional flexibility. The Commission believes this is acceptable because the Tier 2 information is not as safety significant as the Tier 1 information. Therefore, Sections 8(b)(3) and (4) of the proposed rule do not require the additional consideration of the reduction in standardization caused by proposed departures from Tier 2 information.

A generic change to either Tier 1 or 2 information in the DCD is accomplished by rulemaking. Any person seeking to make a generic change to the DCD, including the applicant for this design certification, must submit a petition pursuant to 10 CFR 2.802. This petition must describe how the proposed change meets the standards in 10 CFR 52.63(a)(1) for justifying a generic change to the DCD. Any generic changes to the DCD resulting from the rulemaking will be noticed in the Federal Register. The NRC will update the master DCD in its central files and the copies in the NRC Library and public document room (refer to the discussion in Section III.D). Under Sections 8(a)(2) and (b)(2) generic changes Tier 1 and Tier 2 respectively, will be applicable to all plants

referencing the design certification. However, if the Commission determines that a generic change is not technically relevant to a particular plant, based on plant-specific changes made pursuant to Section 8, then the generic rulemaking will indicate that the change will not be applicable to that plant. If the proposed change to the DCD also results in a violation of an underlying regulation that is applicable to this design certification, then an exemption to that regulation is also required.

A plant-specific departure from either Tier 1 or 2 information in the DCD does not require rulemaking. Any person requesting a Commission order directing a plant-specific change, including the applicant for this design certification, must submit a petition pursuant to 10 CFR 2.206. This petition must describe how the proposed change meets the standards in 10 CFR 52.63(a)(3) or Section 8(b)(3) for departures from Tier 1 or 2 information, respectively. By contrast, an applicant or licensee that references this design certification rule may request exemptions from Tier 1 or 2 information pursuant to 10 CFR 52.63(b)(1) or Section 8(b)(4) of this rule, respectively. The NRC recognized that there may be special circumstances pertaining to a particular applicant or licensee that would justify an exemption from the DCD. The request must describe how the exemption from Tier 1 or 2 meets the standards in 10 CFR 52.63(b)(1) or Section 8(b)(4) of this proposed rule, respectively. The exemption may be contested in a hearing, if the exemption is granted in connection with issuance of a construction permit, operating license, or combined license; it may also be contested in a hearing, if the exemption also requires the issuance of a license amendment. If a plant-specific change or exemption from the DCD also results in a violation of the underlying regulation that is applicable to this design certification, then an exemption to that regulation is also required.

In addition to the plant-specific changes described above, an applicant or licensee that references this design certification rule may depart from Tier 2 information, without prior NRC approval pursuant to Section 8(b)(5) of this proposed rule. However, the Commission believes that these changes should open the possibility for challenge in a hearing (refer to discussion on Topic #2). The Commission approved the use of this "§ 50.59-like" change process in its SRMs on SECY-90-377 and SECY-92-287A. The NRC is interested in the public's view on how these changes could be challenged in a hearing (refer to Section IV, questions 4, 5, and 6).

As in 10 CFR 50.59, an applicant or licensee cannot make changes that involve an unreviewed safety question (USQ) or technical specifications, without prior NRC approval. Also, for changes pursuant to Section 8(b)(5), an applicant or licensee cannot make changes to Tier 1 or Tier 2* information without prior NRC approval. If the proposed change does not involve these factors, then the NRC will allow changes to previously approved information in Tier 2 without prior NRC approval. However, if the change involves an issue that the Commission has not previously approved, then NRC approval is required. The process for evaluating proposed tests or experiments not described in Tier 2 will be developed for an operating or combined license that references this design certification (refer to Section IV).

The restriction on changing Tier 1 information is included in the process in Section 8(b)(5) because this information can only be changed pursuant to Section 8(a) of the proposed rule. Whereas, the restriction on changing Tier 2* information resulted from the development of the Tier 1 information in the DCD. A description of the Tier 1 information is provided in the discussion in Section III.D on contents of the design certification. During the development

of the Tier 1 information, the applicant for design certification requested that the amount of information in Tier 1 be minimized to provide additional flexibility for the applicant or licensee that references this design certification. Also, many codes, standards, and design processes which were not specified in Tier 1 for meeting the acceptance criteria in ITAAC. The result of these actions is that certain relatively significant information only exists in Tier 2 and the Commission does not want this significant information changed without prior NRC approval. The NRC specified this information in its FSER and the design certification applicant has identified this information in its DCD. This information has come to be known as Tier 2* information and it has compensated for industry's desire to minimize the amount of information in Tier 1.

In the ANPR, the NRC referred to the Tier 2* information as pre-identified unreviewed safety questions (USQs) because there was already an established procedure in 10 CFR 50.59 for FSAR changes that constitute USQs, which require NRC approval. NEI stated in its comments on the ANPR that it was not necessary to create an artificial set of USQs in order to accomplish the NRC's objective of requiring prior approval. Therefore, the proposed rule was changed from the ANPR to simply state that the Tier 2* information cannot be changed without prior NRC approval. Also, NEI requested in its comments that the Tier 2* information not be identified in the design certification rule, as was proposed in the ANPR, and that an expiration date be considered for the restriction in the change process for Tier 2* information. NRC agrees that Tier 2* information can be identified in the DCD and Section 8(b)(5) of the proposed rule was changed accordingly. The NRC also reevaluated the duration of the change restriction for Tier 2* information and determined that some of the Tier 2*

information can expire when the plant first achieves 100% power while other Tier 2* information must remain in effect throughout the life of the plant that references the DCR. The DCD sets forth an expiration date for some of the Tier 2* information.

As part of this rulemaking, the NRC is seeking public comments on the appropriate regulatory process to use for review of proposed changes to Tier 2* information. Currently, pursuant to 10 CFR 50.59, the NRC approves changes to FSAR information that constitute a USQ or involve technical specifications through the issuance of license amendments. However, if an applicant or licensee requests NRC approval for a proposed change to Tier 2* information, should the NRC review process be similar to that for a USQ? While it is clear that these proposed changes would all involve significant design-related information and that prior review of proposed departures from Tier 2 information is necessary, the NRC has not determined if it is always appropriate to process the approved changes as either an amendment to the license application or an amendment to the license, with the requisite hearing rights. Therefore, the NRC requests the public's view on the preferred regulatory process for these changes (refer to Section IV).

An applicant or licensee that plans to depart from Tier 2 information, pursuant to Section 8(b)(5), must prepare a safety evaluation which provides the bases for the determination that the proposed change does not involve an unreviewed safety question, a change to Tier 1 or Tier 2* information, or a change to the technical specifications. In order to achieve the Commission's goals for design certification, the evaluation needs to consider all of the matters that were resolved in the DCD, including the generic issues discussed in Chapter 20 of the FSER. The benefits of the early resolution of safety issues

would be lost if changes were made to the DCD that violated these resolutions without NRC approval. The evaluation of the resolved issues needs to consider the proposed change over the full range of power operation from startup to shutdown, including issues resolved under the heading of shutdown risk, as it relates to anticipated operational occurrences, transients, and design basis accidents. The evaluation should consider the tables in Sections 14.3 and 19.8 of the DCD to ensure that the proposed change does not impact Tier 1. These tables contain various cross-references from the plant safety analyses in Tier 2 to the important parameters that were included in Tier 1. Although many issues and analyses could have been cross-referenced, the listings in these tables were developed only for key plant safety analyses for the design. GE provided more detailed cross-references to Tier 1 for these analyses in a letter dated March 31, 1994, and ABB-CE provided more detailed cross-references in a letter dated June 10, 1994. The NRC does not endorse NSAC-125, "Guidelines for 10 CFR 50.59 Safety Evaluations," for performing the safety evaluations required by Section 8(b)(5) of the proposed rule. However, the NRC will work with industry, if it is desired, to develop an appropriate guidance document for implementing Section 8 after the final rule is issued.

During the review of its DCD, GE requested that the determination of whether a proposed departure from Tier 2 information that involves severe accident issues constitutes a USQ use criteria that are different from the criteria for USQ determinations proposed in the ANPR [10 CFR 50.59(a)(2)]. GE argued that not all increases in the probability or consequences of severe accidents are significant from a safety standpoint. Minor increases in the probability of some accident scenarios will not affect the overall core damage frequency or the conclusions of the severe accident evaluations. Therefore, GE

proposed that changes to Tier 2 information that result in insignificant increases in the probability or consequences of severe accidents not constitute a USQ.

The NRC believes that it is important to preserve and maintain the resolution of severe accident issues just like all other safety issues that were resolved during the design certification review (refer to SRM on SECY-90-377). However, because of the increased uncertainty in severe accident issue resolutions, the NRC has proposed, in Section 8(b)(5), separate criteria for determining whether a departure from information associated with severe accident issues constitutes a USQ. The new criteria in Section 8(b)(5)(iii) will only apply to Tier 2 information that is associated with the severe accident issues discussed in the section of the DCD identified in the rule. The criteria for USQ determinations in Section 8(b)(5)(ii), which are the same as those proposed in the ANPR, will apply to other Tier 2 information. If the proposed departure from Tier 2 information involves the resolution of other safety issues in addition to the severe accident issues, then the USQ determination should be based upon the criteria in Section 8(b)(5)(ii). The NRC is interested in the public's view on whether the Tier 2 information involving resolutions of severe accident issues should be treated differently for USQ determinations than all other safety issues? If so, are the proposed criteria in Section 8(b)(5)(iii) sufficient to determine if a proposed departure from information associated with severe accident issues constitutes a USQ? (Refer to Section IV, question 7)

The NRC is also proposing two additional provisions to the change process that were not in the ANPR. The first is Section 8(b)(5)(iv), which provides that changes made pursuant to Section 8(b)(5) do not also require an exemption from the design certification rule. Because the Tier 2 information is

incorporated by reference into the design certification, a departure from Tier 2 pursuant to Section 8(b)(5) would also require an exemption from the design certification rule absent this proposed provision. The second provision is Section 8(c), which makes it clear that proposed changes to requirements in this design certification rule that are neither Tier 1 nor Tier 2 must be done by exemption pursuant to 10 CFR 50.12. Such requirements include the recordkeeping and reporting requirements in Section 9 of this proposed rule.

I. Records and Reports

The purpose of Section 9 of this proposed rule entitled, "Records and Reports," is to set forth the requirements for maintaining records of DCD changes and submitting reports to the NRC. This section is similar to the requirements for records and reports in 10 CFR Part 50 and § 52.63(b)(2), with the following differences. Section 9(a)(1) requires an applicant for design certification to maintain an up-to-date copy of the DCD that includes all generic changes to Tier 1 and 2 information that are made by rulemaking. This will ensure that the design certification applicant provides up-to-date versions of the DCD to prospective applicants that want to reference this design certification or to other interested parties who want copies of the DCD. Section 9(a)(2) requires an applicant or licensee that references this design certification to maintain an up-to-date plant-specific version of the DCD that includes both generic changes to the DCD, as well as plant-specific departures from the DCD. This ensures that the plant records which include an accurate DCD reflecting information specific to the plant as well as changes to the DCD.

The proposed rule also establishes reporting requirements in Section 9(b) for applicants or licensees that reference this design certification rule. The requirements in Section 9(b) are similar to the reporting requirements in 10 CFR Part 50, except that they include reporting of changes to or departures from the plant-specific DCD. In addition, the reporting requirements in Section 9(b) vary according to whether the changes are made as part of an application, during plant construction, or during operation. Also, the reporting frequency of summary reports of departures from and periodic updates to the DCD increases during plant construction. If an applicant that references this design certification rule decides to adopt departures from the DCD that were developed, but not approved pursuant to Section 8 of this proposed rule, before its application (i.e., first of a kind engineering), then the proposed departures from the DCD must be submitted with the initial application for a construction permit or combined license.

For currently operating plants, a licensee is required to maintain records of the basis for any design change made to the plant pursuant to 10 CFR 50.59. Further, a licensee is required to provide a summary of these changes to the NRC on at least a biannual basis, along with updates to the final safety analysis report pursuant to 10 CFR 50.71. The proposed rule allows departures from the DCD during the periods of application, construction, and operation of the plant. Therefore, the proposed rule requires timely submittal of summary reports of departures from, as well as, updates to the DCD during each of these intervals, consistent with the Commission's guidance on reporting frequency in its SRM on SECY-90-377.

NEI proposed reporting of design changes at a 6-month interval, in its comments on the ANPR, to "avoid unnecessarily diverting owner/operator resources

to meet excessive reporting requirements." The NRC does not agree with the NEI proposal for semi-annual reporting of design changes because it does not provide for sufficiently timely notification of design changes during plant construction. Therefore, the Commission retained the requirement for quarterly reporting of changes in the proposed rule. However, the NRC modified the provisions in the proposed rule to relax the reporting requirements before issuance of a construction permit or combined license. During this interval, summary reports of changes should be submitted to the NRC as part of the amendments to the construction permit or combined license application. Also, the NRC relaxed the provisions in Section 9(b) so that during operation of a plant, the reporting requirements are the same as for currently operating plants (biannual).

The Commission believes that quarterly reporting of design changes during the period of construction are necessary to closely monitor the status and progress of the construction of the plant. As required by 10 CFR 52.99, the NRC must find that the ITAAC have been successfully met. The ITAAC verify that the as-built facility conforms with the approved design and emphasize design reconciliation and design verification of the as-built plant. To make its finding, the NRC must tailor its inspection program to monitor plant construction and adjust its program to accommodate changes. Quarterly reporting of design changes will facilitate these adjustments in a timely manner and aids in a common understanding of the plant as the changes are being made. This is particularly important in times where the number of design changes could be significant, such as during the procurement of components and equipment, detailed design of the plant at the start of construction, and during pre-operational testing.

Section 9(c) of the proposed rule requires that records are kept for the lifetime of a facility, as in 10 CFR Part 50 and § 52.63(b)(2).

J. Applicability of a DCR in 10 CFR Part 50 licensing proceedings.

Several provisions in 10 CFR Part 52, Subpart B suggest that design certification rules (DCRs) may be referenced not only in combined license proceedings under 10 CFR Part 52, Subpart C but also in licensing proceedings under 10 CFR Part 50. Section 52.63(c) states:

The Commission will require, prior to granting a construction permit, combined license, or operating license which references a standard design certification, that information normally contained in certain procurement specifications and construction and installation specifications be completed and available for audit if such information is necessary for the Commission to make its safety determination, including the determination that the application is consistent with the certified design. (Emphasis supplied.)

See also §§ 52.41, 52.55(b), 52.55(c), 52.63(a)(4), 52.63(b)(1).

However, these provisions of 10 CFR Part 52, Subpart B are inconsistent in identifying the *type* of Part 50 proceeding in which design certification rules may be referenced. For example, although § 52.63(c) (quoted above) and § 52.55(c) explicitly provide for referencing of design certification rules in 10 CFR Part 50 *construction permit* proceedings, §§ 52.55(b), 52.63(a)(4) and

52.63(b)(1) refer only to *operating license* proceedings. Section 52.63(a)(4) is illustrative:

Except as provided for in 10 CFR 2.758, in making the findings required for issuance of a combined license or operating license, or for any hearing under § 52.103, the Commission shall treat as resolved those matters resolved in connection with the issuance or renewal of a design certification. (Emphasis supplied.)

Therefore, some might question whether the Commission intended construction permits applicants under 10 CFR Part 50 to have the option of referencing design certification rules. However, the Commission has not identified any regulatory or policy reasons for precluding a construction permit applicant from referencing a design certification rule while allowing an operating license applicant to do so. Thus, the Commission believes that 10 CFR Part 52 provides the discretion to authorize a construction permit applicant under 10 CFR Part 50 to reference a design certification rule.

Assuming that the Commission has such discretion, there are a number of issues that present themselves. Should the Commission exercise its discretion to allow construction permit applicants to reference this design certification rule? Should the Commission require that if a design certification rule is to be relied upon in 10 CFR Part 50 licensing proceedings, it must be referenced in both the construction permit and operating license applications? Would it make sense to allow an operating license applicant to reference a design certification if the underlying construction permit did not reference the design

certification? The Commission recognizes that consideration of these issues depends in part upon the legal significance of a design certification in the 10 CFR Part 50 licensing proceeding, as well as its significance for the permittee or licensee once the construction permit or operating license is granted. In particular, 10 CFR Part 52, Subpart B does not say what the legal effect is (if any) of ITAAC in a Part 50 operating license proceeding in which the underlying construction permit references a design certification.

In view of the status of ITAAC as Tier 1 information, how would a construction permit applicant referencing a design certification rule avoid referencing the ITAAC? What would be the consequences for the construction permit applicant of referencing ITAAC? If the underlying construction permit referenced ITAAC, then what (if any) would be the scope and nature of "issue preclusion" at the operating license stage, in terms of staff/Commission review and approval of the operating license application, as well as issues which are precluded from consideration under 10 CFR 2.758? The Commission seeks the public's views on the referencing of design certification rules in 10 CFR Part 50 applications (refer to Section IV, question 8).

IV. SPECIFIC REQUESTS FOR COMMENTS

In addition to the general invitation to submit comments on the proposed rule, the DCD, and the environmental assessment, the NRC also invites specific comments on the following questions:

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

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

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 III.D.)

4. 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.)

5. 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 III.H.)

6. 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 III.H.)

7. 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 III.H.)

8(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?

8(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?

(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 this design certification, or may resolution of these issues be deferred without adverse consequence (e.g., without foreclosing alternatives for future resolution).

V. COMMENTS AND HEARINGS IN THE DESIGN CERTIFICATION RULEMAKING

A. Opportunity to Submit Written and Electronic Comments

Any person may submit written comments on the proposed design certification rule to the Commission for its consideration.³ Commenters have 120 days from the publication of this notice to file written comments on the proposed design certification rule.

Submission of Comments in Electronic Format:

Commenters are encouraged to submit, in addition to the original paper copy, a copy of the comment letter in electronic format on a DOS-formatted (IBM compatible) 3.5 or 5.25 inch computer diskette. Text files should be provided in WordPerfect format or unformatted ASCII code. The format and version should be identified on the diskette's external label.

³An opportunity for public comment is required by Section 553 of the Administrative Procedures Act and 10 CFR 52.51(b).

Comments may also be submitted electronically, in either ASCII text or Wordperfect format (version 5.1 or later), by calling the NRC Electronic Bulletin Board on FedWorld. The bulletin board may be accessed using a personal computer, a modem, and one of the commonly available communications software packages, or directly via Internet.

If using a personal computer and modem, the NRC subsystem on FedWorld can be accessed directly by dialing the toll free number: 1-800-303-9672. Communication software parameters should be set as follows: parity to none, data bits to 8, and stop bits to 1 (N,8,1). Using ANSI terminal emulation, the NRC rules subsystem can then be accessed by selecting the "Rules" option from the "NRC Main Menu." For further information about options available for NRC at FedWorld consult the "Help/Information Center" from the "NRC Main Menu." Users will find the "FedWorld Online User's Guides" particularly helpful. Many NRC subsystems and databases also have a "Help/Information Center" option that is tailored to the particular subsystem.

The NRC subsystem on FedWorld can also be accessed by a direct dial phone number for the main FedWorld BBS: 703-321-8020; Telnet via Internet: fedworld.gov (192.239.92.3); File Transfer Protocol (FTP) via Internet: ftp.fedworld.gov (192.239.92.205); and World Wide Web using: <http://www.fedworld.gov> (this is the Uniform Resource Locator (URL)).

If using a method other than the toll free number to contact FedWorld, then the NRC subsystem will be accessed from the main FedWorld menu by selecting the "U.S. Nuclear Regulatory Commission" option from FedWorld's "Subsystems/Databases" menu or by entering the command `/go nrc` at a FedWorld command line. If NRC access is obtained through FedWorld's "Subsystems/Databases" menu, then return to FedWorld is accomplished by

selecting the "Return to FedWorld" option from the "NRC Main Menu." However, if NRC access at FedWorld is accomplished by using NRC's toll-free number, access to all NRC systems is available, but there will be no access to the main FedWorld system. For more information on NRC bulletin boards call Mr. Arthur Davis, Systems Integration and Development Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 415-5780; e-mail AXD3@nrc.gov.

Public Meeting:

The NRC staff plans to conduct a public meeting on this proposed rule approximately 60 days following the date of its publication in the Federal Register. The specific date, time, and location of the meeting will be published in a future Federal Register notice. The purpose of the public meeting will be to discuss this proposed rule and respond to questions on the meaning and intent of any provisions of this proposed rule. It is hoped that this meeting will be helpful to persons who intend to submit written comments on the proposed rule. An official transcript of the proceedings of the public meeting will be prepared.

B. Opportunity to Request Hearing

Any person may request an *informal* hearing on one or more specific matters with respect to the proposed design certification rule.⁴ An informal hearing provides the admitted party with an opportunity to provide written and oral presentations on those matters to an Atomic Safety and Licensing Board, and to request that the licensing board question the applicant on those matters. The

⁴An opportunity for a hearing is provided by 10 CFR 52.51(b).

conduct of an informal hearing is discussed in more detail in Section C. below. Under certain circumstances, a party in an informal hearing may request that the Commission hold a formal hearing on specific and substantial factual disputes necessary to resolution of the matters for which the party was granted an informal hearing (see Section C.11 below).

A person may request an informal hearing even though that person has not submitted separate written comments on the design certification rule (i.e., is not a commenter). Requests for an informal hearing must be received by the Commission no later than 120 days from the publication of this notice, and a copy of the request must be sent via overnight mail to the design certification applicant at the following address: Mr. Charles B. Brinkman, Director, Nuclear Systems Licensing, ABB-Combustion Engineering, Inc., P.O. Box 500, 1000 Prospect Hill Road, Windsor, CT 06095-0500. The information which a person requesting a hearing must provide in the hearing request, as well as the procedures and standards to be used by the Commission in its determination of the request, are discussed in Sections C.1 through C.4 below.

A person who wishes to review any proprietary information submitted by the design certification applicant *must request an informal hearing*. The hearing request should state that an informal hearing is sought in order to obtain access to proprietary information. The person should then seek access to the information directly from the design certification applicant as discussed in Section F. below.

The Commission is also providing an opportunity for interested State, county, and city/municipal and other local Governments, as well as Native American tribal governments to participate as "interested governments" in any

informal hearings which the Commission authorizes, similar to their participation as "interested governments" in Subpart G hearings under 10 CFR 2.715. State, county, city/municipal, local and tribal Governments wishing to participate as an "interested government" in any design certification rulemaking hearings which may be held must file their request to participate no later than 120 days from the publication of this notice.

C. Hearing Process

1. Filings and Computation of Times

All notices, papers, or other filings discussed in this section must be filed by express mail.⁵ The time periods specified in this section have been established based upon such a filing. The express mail filing requirement shall be considered in establishing other filing deadlines.

In computing any period of time, the day of the act, event, or default after which the designated period of time begins to run is not included. The last day of the period so computed is included, unless it is a Saturday, Sunday, or legal holiday at the place where the action or event is to occur, in which case the period runs until the next day which is neither a Saturday, Sunday, nor holiday.

2. Content of Hearing Request

⁵Filings discussed in this section may also be served upon the Commission in electronic form in lieu of express mail. However, parties must serve copies of their filings on other parties by express mail, unless the receiving party agrees to filing in electronic form. These filings must be transmitted no later than the last day of the time period specified for filing and must be in accordance with the requirements specified in the Summary.

The Commission will grant a request for an informal hearing only if the hearing request satisfies each of the following two requirements. First, the hearing request must include the written presentations which the requestor wishes to be included in the record of the hearing. The written presentations must:

(i) Identify the specific portion of the proposed design certification rule or supporting bases which are challenged,

(ii) Describe the reasons why the proposed rule or supporting bases are incorrect or insufficient, and

(iii) Identify the references or sources upon which the person requesting the hearing relies.

If the requestor has submitted written comments in the public comment period addressing these three factors for the specific issue for which the requestor seeks a hearing, it will be sufficient for the requestor to identify the portions of the written comments which the requestor intends to submit as a written presentation. Also, the hearing request must demonstrate that the requestor (or other persons identified in the hearing request who will represent, assist, or speak on behalf of the requestor at the hearing) has appropriate knowledge and qualifications to enable the requestor to contribute significantly to the development of the hearing record on the specific matters at issue. The Commission does not intend that the requestor meet a judicial "expert witness" standard in order to meet the second criterion. Nonetheless, given the substantial commitment of time and resources associated with any hearing, the Commission believes it to be a reasonable prerequisite that the hearing requestor demonstrate that he/she (or his/her assistant) has:

- (i) Substantial familiarity with the publicly available docketed information relevant to the issue for which a hearing is requested;
- (ii) The requisite technical capability to understand the factual matters and develop a record on the issue for which a hearing is requested, and
- (iii) An understanding of the NRC's hearing procedures in 10 CFR Part 2.⁶

3. Request to Hold Hearing Outside of Washington, DC

Any hearing(s) which the Commission may authorize ordinarily will be conducted in the Washington, DC. metropolitan area. However, the Commission at its discretion may schedule hearings outside the Washington, DC. metropolitan area in response to requests submitted by a person requesting a hearing that all or part of the hearing be held elsewhere. These requests must be submitted in conjunction with the request for hearing, and must specifically explain the special circumstances for holding a hearing outside the Washington, DC. metropolitan area.

4. Responses to Hearing Request

The applicant may file a response to any hearing request within 15 days of the date of the hearing request. The NRC staff will not provide a response to the hearing request unless requested to do so by the Commission but may assist the Commission in its ruling on the request.

5. Commission Determination of Hearing Request

⁶Requestors will satisfy this requirement by stating that they possess and have read a copy of 10 CFR Part 2, Subparts A, G, and L.

The Commission intends to rule on a hearing request within 20 days of the close of the period for requesting a hearing. The Commission's determination will be based upon the materials accompanying the hearing request and the applicant's response (and the NRC staff's response, if requested by the Commission). The hearing request shall be granted if:

(i) The request is accompanied by a written presentation containing the information required by Section C.1. above; and

(ii) the requestor has the appropriate knowledge and qualifications to enable the requestor to contribute significantly to the development of the hearing record on the matters sought to be controverted.

The Commission may consult with the NRC staff before its determination of a hearing request. A written decision either granting or denying the hearing request will be published by the Commission.

If a hearing request is granted in whole or in part, the Commission's decision will delineate the controverted matter that will be the subject of the hearing and whether any issues and/or parties are to be consolidated (see Section C.7. below). The Commission's decision granting the hearing will direct the establishment of a licensing board to preside over the informal hearing. Finally, the Commission's decision will specify:

(i) The date by which any requests for discovery must be filed with the licensing board (normally 20 days after the date of the Commission's decision), and

(ii) The date by which any objections to discovery must be filed (see Section C.9. below).

The Commission's decision will be sent to each admitted party by overnight mail. Separate hearings may be granted for each controverted matter or set of

consolidated matters. Thus, if there are three different controverted matters, the Commission may establish three separate hearings. In this fashion, closing of the hearing record on a controverted matter and its referral to the Commission for resolution need not await completion of the hearing on the other controverted matters. Finally, the Commission's decision will rule on any requests for hearings outside of the Washington, DC. metropolitan area (see Section C.2 above).

6. Authority of the Licensing Board

If the Commission authorizes an informal hearing on a controverted matter, the licensing board will function as a "limited magistrate" in that hearing with the authority and responsibility for assuring that a sufficient record is developed on those controverted matters which the Commission has determined are appropriate for consideration in that hearing. The licensing board shall have the following specific responsibilities and authority:

(1) Schedule and expeditiously conduct the informal hearing for each admitted controverted matter, consistent with the rights of all the parties,

(2) Review all discovery requests against the criteria established by the Commission, and refer all appropriate requests to the Commission with a decision explaining the licensing board's action,

(3) Preside over and resolve any issues regarding the scheduling and conduct of any discovery authorized by the Commission,

(4) Order such further consolidation of parties and issues as the licensing board determines is necessary or desirable,

(5) Orally examine persons making oral presentations in the informal hearing, based in part upon the licensing board's review of the parties' proposed oral questions to be asked of persons making oral presentations,

(6) Request that the NRC staff:

(i) Answer licensing board questions about the SER or the proposed rule,

(ii) Provide additional information or documentation with respect to the design certification, and

(iii) Provide other assistance as the licensing board may request.

Licensing board requests for NRC staff assistance should be framed such that the NRC staff does not assume a role as an adversary party in the informal hearing (see Section C.8 below),

(7) Review all requests for additional hearing procedures and refer all appropriate requests to the Commission with a decision explaining the licensing board's action,

(8) Certify the hearing record to the Commission, based upon the licensing board's determination that the hearing record contains sufficient information for the Commission to make a reasoned determination on the controverted matter.

(9) At its discretion, include with its certification the licensing board's proposed findings on factual disputes and/or recommendations on the controverted matters for consideration by the Commission; and

(10) Include with its certification any concerns identified by the licensing board in the course of the hearing which, although neither raised by the parties nor necessary to resolution of the controverted hearing matters, are significant enough in the licensing board's view to warrant attention by the Commission.

Licensing board determinations with respect to referral of requests to the Commission, as well as licensing board determinations of parties' motions, are not appealable to the Commission as an interlocutory matter. Instead, any disagreements with the licensing board's determinations and a specific discussion of how the hearing record is deficient with respect to the contested issue must be set forth in the parties' proposed findings of fact which are submitted directly to the Commission (see Section C.13 below).

As suggested by Item (10) above, the licensing board shall not have any "sua sponte" authority analogous to 10 CFR 2.760a. The Commission believes that in the absence of a request for an informal hearing on a matter, the Commission should resolve issues with respect to the design certification rule in the same manner as other agency-identified rulemaking issues, viz., through NRC staff consideration of the issue followed by the Commission's review and its final resolution of the matter. However, when it certifies the completed hearing record to the Commission (see Section C.12. below), the licensing board should identify to the Commission any concerns identified during the hearing that are significant enough to warrant Commission consideration but that are unnecessary or irrelevant to the resolution of the controverted hearing matter.

The licensing board shall close the hearing and certify the record to the Commission only after it determines that the record on the controverted matter is sufficiently complete for the Commission to make a reasoned determination with respect to that matter. However, the licensing board shall not have any responsibility or authority to resolve and decide controverted matters in either an informal or a formal hearing. Rather, the Commission retains its traditional authority in rulemaking proceedings to evaluate and resolve all rulemaking issues identified in public comments on a proposed rule. Therefore, the

Commission will resolve any controverted matters that are the subject of a hearing in this design certification rulemaking. However, the licensing board may submit for the Commission's consideration proposed findings on factual disputes, and/or recommendations on underlying matters of controversy.

7. Consolidation of Parties and Issues; Joint Hearings on Related Issues.

If two or more persons seek an informal hearing on the same or similar matters, the Commission may, in its discretion, grant an informal hearing and consolidate the matters into a single issue (as defined by the Commission). The Commission may also, in its discretion, require that the parties be consolidated analogous to the consolidation permitted under 10 CFR 2.715a. If the Commission consolidates two or more issues into a single consolidated issue but does not consolidate parties, each admitted person will be deemed a separate party with an individual right to:

- (i) Submit separate written presentations,
- (ii) Submit separate sets of proposed oral questions to be asked by the licensing board (see Section C.10 below),
- (iii) Make separate oral presentation, and
- (iv) Submit and separately respond to motions.

If the Commission also requires that parties be consolidated, the consolidated parties must participate jointly, including deciding upon written and oral presentations, submitting a single set of written questions, submitting motions supported by each of the consolidated parties, and responding to motions filed by other parties.

During the informal hearing, the licensing board may decide that further consolidation of issues or parties would simplify the overall conduct of informal hearings or materially reduce the time or resources devoted to the hearings. In these instances, the licensing board may direct such consolidation. The licensing board shall set forth the issues and/or parties to be consolidated and the reasons for such consolidation in a written order.

8. Status of the Design Certification Applicant, the NRC staff and Requesting Party

The design certification applicant shall be a party in the informal hearing, with the right to submit written and oral presentations, propose questions to be asked by the licensing board of oral presenters, and file and submit appropriate motions.

The NRC staff shall *not* be a party in the informal hearing but shall be available in the informal hearing to answer licensing board questions about the FSER or the proposed rule, provide additional information or documentation with respect to the design certification, and provide other assistance that the licensing board may request without the NRC staff assuming the role of a party in the informal hearing.

A party whose hearing requests have been granted with respect to a particular controverted matter shall not participate with respect to any controverted matter on which the party was not granted a hearing. For example, if Person 1 has been authorized as a party on Issue A and Person 2 has been authorized as a party on Issue B, then Person 1 may participate only in the informal hearing on Issue A, and may *not* participate in the informal hearing on

Issue B. Conversely, Person 2 may participate only in the informal hearing on Issue B, and may *not* participate in the informal hearing on Issue A.

9. Requests for Discovery

Any party may request the opportunity to conduct discovery against another party before the oral phase of the informal hearing. The request for discovery must:

- (i) Identify the type of discovery permitted under 10 CFR §§ 2.740, 2.740a, 2.740a(b), 2.741, and 2.742 which the party seeks to use;
- (ii) Identify the subject matter or nature of the information sought to be obtained by discovery; and
- (iii) Explain *with particularity* the relevance of the information sought to the controverted matter which is the subject of the hearing and why this information is indispensable to the presentation of the party's position on the controverted matter.

The request shall be filed with the licensing board, with copies of the request to be filed with the party against which discovery is sought, and the NRC staff. The requests must be received no later than the deadline specified by the Commission in its decision granting a party's hearing request (see Section C.4. above). A party against whom discovery is sought may file a response objecting to part or all of the request. Such a response must explain *with particularity* why the discovery request should not be granted.

The licensing board shall review all discovery requests and refer to the Commission those requests that it believes should be granted within 7 days after the date for receiving a party's objections to a discovery request. The licensing board shall issue a written decision explaining its basis for either

referring the request to the Commission or declining to refer it. The written decision shall accompany the discovery requests which are referred by the licensing board to the Commission.

The Commission will determine whether to grant any discovery requests forwarded to it based upon the licensing board's decision, together with the request and the design certification applicant's response (and any NRC staff response requested by the licensing board). Discovery will be at the discretion of the Commission. In this regard, the Commission notes that there are several docket files in which the NRC staff has placed information and documents received from the design certification applicant for the System 80+ design certification review. The application was docketed on May 1, 1991 and assigned Docket No. 52-002. Correspondence relating to the application prior to this date was also addressed to Docket No. STN 50-470 and Project No. 675. This information includes the Combustion Engineering Standard Safety Analysis Report-DC (CESSAR-DC), through Amendment W, and the Technical Support Document for Amendments to 10 CFR Part 51 Considering Severe Accidents Under NEPA for Plants of the System 80+ Design, Revision 2. Furthermore, the docket files contain NRC staff communications and documents, such as written questions and comments provided to the design certification applicant, and summaries of meetings held between the NRC staff and the design certification applicant. The NRC staff's bases for approving the System 80+ design are set forth in the FSER (NUREG-1462), dated August 1994. The Commission also notes that each admitted party has already disclosed a substantial amount of information in its hearing request, relating both to bases for the party's position with respect to the controverted matter as well as information on the qualifications of the party (or its representatives and witnesses in the hearing).

As discussed above, much of the information documenting the NRC staff's review and approval of the design certification application has been routinely placed in the docket file. Furthermore, as discussed above in Section C.8., the NRC staff is not a party in an informal hearing. Therefore, the Commission has decided that in an informal hearing, the parties should *not* be afforded discovery against the NRC staff.

10. Conduct of Informal Hearing

If the Commission authorizes discovery, the licensing board shall establish a schedule for the conduct and completion of discovery. Normally, the licensing board should not permit more than one round of discovery. The Commission will not entertain any interlocutory appeals from licensing board orders resolving any discovery disputes or otherwise complaining of the scheduling of discovery.

Following the completion of discovery, the licensing board should issue an order setting forth the date of commencement of the oral phase of each informal hearing, and the date (no less than 30 days before the commencement of the oral phase of the hearing) by which parties must submit:

- (i) The identities and curriculum vitae of those persons providing oral presentations;
- (ii) The outlines of the oral presentations; and
- (iii) Any questions which a party would like the licensing board to ask.

The licensing board may schedule the oral phases of two or more informal hearings to be held during the same session. The licensing board shall publish a notice in the Federal Register announcing the commencement of the oral phase of the informal hearing(s). The notice shall set forth the place and time of

the oral hearing session, the subject matter(s) of the informal hearing(s), a brief description of the informal hearing procedures, and a statement indicating that the public may observe the informal hearing.

Based upon the parties' outlines of the oral presentations and proposed questions the licensing board should determine whether it has specific questions of the NRC staff with respect to the staff's review of the design certification application. These questions should be submitted in writing to the NRC staff no less than 20 days before the commencement of the oral phase of the hearing and must specify the date by which the NRC staff shall provide its written answers to the licensing board. The licensing board shall send copies of the request by overnight mail to all parties. The NRC staff shall file its written answers with the licensing board and the parties.

During the oral phase of the hearing, the licensing board shall receive into evidence the written presentations of the parties and permit each party (or the representatives identified in their hearing request) to make oral presentations addressing the controverted matter. Normally, the party raising the controverted matter should make their presentations, followed by the presentations of the design certification applicant. The licensing board may question the persons making oral presentations, using its own questions as well as those submitted to the licensing board by the other parties. Based upon the parties' oral presentations and/or responses to licensing board questions, the licensing board may also orally question the NRC staff.

11. Additional Hearing Procedures and Formal Hearings

After the parties have made their oral presentations and the licensing board has concluded its questioning of the presenters (and, as applicable, the NRC staff), the licensing board should declare that oral phase of an informal hearing on a controverted matter (or consolidated set of controverted matters) is completed.

No later than 10 days after the licensing board has declared that the oral phase of the informal hearing has been completed, parties may file with the licensing board (with copies to the applicant and the NRC staff) a request that some or all of the procedures described in 10 CFR Part 2, Subpart G (e.g., direct and cross-examination by the parties) be utilized. The request shall:

- (i) Identify the specific hearing procedures which the party seeks, or state that a formal hearing is requested;

- (ii) Identify the specific *factual* issues for which the additional procedures would be utilized;

- (iii) Explain why resolution of these factual disputes are necessary to the Commission's decision on the controverted issue;

- (iv) Explain, with specific citations to the hearing record, why the record is insufficient on the controverted matter; and

- (v) Identify the nature of the evidence that would be developed utilizing the additional procedures requested.

The design certification applicant may file a response to these requests no later than 7 days after the applicant's receipt of a request for additional procedures. The NRC staff will not provide a response unless specifically requested to do so by the licensing board.

The licensing board will review all requests for additional hearing procedures or a formal hearing and refer those that it believes should be granted to the Commission for its determination. The licensing board shall issue a written decision explaining its determination whether to forward the request to the Commission no later than 7 days after receipt of any applicant response to the request. The decision will provide the basis for either forwarding the request to the Commission or declining to forward it. In the absence of any requests for hearing procedures or if the licensing board concludes that none of the requests should be referred to the Commission, the licensing board should declare that the hearing record is closed (see Section C.12 below).

The Commission will determine whether to grant any requests for additional procedures or a formal hearing that are forwarded by the licensing board. The Commission's determination shall be based upon the licensing board's decision along with the request and the design certification applicant's response. If the Commission directs that a formal hearing be held on a controverted factual matter, the NRC staff shall be a party in the formal hearing. After either the additional hearing procedures authorized by the Commission are completed or the formal hearing is concluded on the factual dispute, the licensing board should declare the hearing record closed (see Section C.12 below).

12. Licensing Board's Certification of Hearing Record to the Commission.

After the oral phase of a hearing is completed and either:

(i) There are no requests for additional hearing procedures or a formal hearing; or

(ii) The licensing board concludes that none of the requests should be referred to the Commission, then the licensing board should declare that the hearing record is closed.

If the Commission directs that additional hearing procedures should be utilized or a formal hearing be held on specific factual disputes, the licensing board should declare the hearing record closed after completion of the additional hearing procedures or the formal hearing. Within 30 days of the closing of the hearing record the licensing board should certify the hearing record to the Commission on each controverted matter (or consolidated set of controverted matters).⁷

The licensing board's certification for each controverted matter (or consolidated set of controverted matters) shall contain:

(i) The hearing record, including a transcript of the oral phase of the hearing (and any pre-hearing conferences) and copies of all filings by the parties and the licensing board,

(ii) A list of all documentary evidence admitted by the licensing board, including the written presentations of the parties,

(iii) Copies of the documentary evidence admitted by the licensing board,

(iv) A list of all witnesses who provided oral testimony,

(v) The NRC staff's written answers to licensing board requests, and

(vi) A licensing board statement that the hearing record contains sufficient information for the Commission to make a reasoned determination on the controverted matter.

⁷An informal hearing is deemed to be completed when the period for requesting additional procedures or a formal hearing expires and no request is received.

At its discretion, the licensing board may also submit for the Commission's consideration proposed findings on factual disputes, and/or recommendations on underlying matters of controversy. Finally, as discussed in Section C.6 above, the licensing board should identify any issues not raised by the parties or otherwise are not relevant to the controverted matters in the hearing, that the licensing board believes are significant enough to warrant attention by the Commission.

13. Parties' Proposed Findings of Fact and Conclusions

The applicant must file directly with the Commission proposed findings of fact and conclusions for each controverted hearing matter (or consolidated set of controverted matters) within 30 days following the close of the hearing record on that matter in the form of a proposed final rule and statement of considerations with respect to the controverted hearing issues.

Other parties are encouraged, but not required, to file with the Commission proposed findings of fact and conclusions limited to those issues which a party was afforded a hearing by the Commission (i.e., a party may *not* file proposed findings of fact and conclusions on issues which it was *not* admitted). Any findings that a party wishes the Commission to consider must be received by the Commission no later than 30 days after the licensing board closes the hearing record on that issue. Although parties are not required to file proposed findings and conclusions, a party who does not file a finding may not, upon appeal, claim or otherwise argue that the Commission either misunderstood the party's position, or failed to address a specific piece of evidence or issue.

D. Resolution of Issues for the Final Rulemaking

1. Absence of Qualifying Hearing Request.

If the Commission does not receive any request for hearing within the 120-day period for submitting a request, or does not grant any of the requests (see Section IV.B.1. above), the Commission will determine whether the proposed design certification rule meets the applicable standards and requirements of the Atomic Energy Act of 1954, as amended (AEA), the National Environmental Policy Act of 1969, as amended (NEPA), and the Commission's rules and regulations. The Commission's determination will be based upon the rulemaking record, which includes: the application for design certification, including the SSAR and DCD; the applicant's responses to the NRC staff's requests for additional information; the NRC staff's FSER and any supplements thereto; the report on the application by the ACRS; the applicant's Technical Support Document addressing consideration of severe accident mitigation design alternatives (SAMDAs) for purposes of NEPA; the NRC staff's EA and draft FONSI; the proposed rule, and the public comments received on the proposed rule. If the Commission makes an affirmative finding, it will issue a standard design certification in the form of a rule by adding a new appendix to 10 CFR Part 52, and publish the design certification rule and a statement of considerations in the Federal Register.

2. Commission Resolution of Issues Where a Hearing is Granted.

All matters related to the proposed design certification rule, including those matters for which the Commission authorizes a hearing (see Sections B. and C. above), will be resolved by the Commission after the licensing board has closed the hearing record and certified it to the Commission. The Commission

will determine whether the proposed design certification rule meets the applicable standards and requirements of the AEA, NEPA, and the Commission's rules and regulations. The Commission's determination will be based upon the rulemaking record as described in Section D.1 above, with the addition of the hearing record for controverted matters. If the Commission makes an affirmative finding, the Commission will issue a final design certification rule as described in Section D.1.

E. Access to Proprietary Information in Rulemaking

Parties who are granted a hearing may request access to proprietary information. Furthermore, as discussed in Section B above, persons seeking access to proprietary information in order to submit written comments on the proposed design certification rule must request an informal hearing. In either case, the procedures for obtaining access to proprietary information are the same and are described below.

Parties must first request access to proprietary information regarding the proposed design certification from the applicant. The request shall state *with particularity*:

- (i) The nature of the proprietary information sought,
- (ii) The reason why the nonproprietary information currently available to the public in the NRC's Public Document Room is insufficient either to develop public comments or to prepare for the hearing,
- (iii) The relevance of the requested information either to the issue which the commenter wishes to comment on, or to the hearing issue(s) for which the party has been admitted, and

(iv) A showing that the requesting party has the capability to understand and utilize the requested information.

The request must be filed with the applicant no later than the date established by the Commission for filing discovery requests with the licensing board.

If the applicant declines to provide the information sought, within 10 days of receiving the request the applicant must send a written response to the requesting party setting forth with particularity the reasons for its refusal. The party may then request the licensing board to order disclosure. The party must include copies of the original request (and any subsequent clarifying information provided by the requesting party to the applicant) and the applicant's response. The licensing board shall base its decision *solely* on the party's original request (including any clarifying information provided by the requesting party to the applicant), and the applicant's response.

Accordingly, a party requesting proprietary information from the applicant should ensure that its request sets forth in sufficient detail and particularity the information required to be included in the request. Similarly, the applicant should ensure that its response to any request states with sufficient detail and particularity the reasons for its refusal to provide the requested information. The licensing board may order the Applicant to provide access to some or all of the requested information, subject to an appropriate non-disclosure agreement.

F. Ex Parte and Separation of Functions Restrictions

Unless the formal procedures of 10 CFR Part 2, Subpart G are approved for a formal hearing in the design certification rulemaking proceeding, the NRC

staff will not be a party in the hearing and separation of functions limitations will not apply. The NRC staff may assist in the hearing by answering questions about the FSER put to it by the licensing board, or to provide additional information, documentation or other assistance as the licensing board may request. Furthermore, other than in a formal hearing, the NRC staff shall not be subject to discovery by any party, whether by way of interrogatory, deposition, or request for production of documents.

Second, the Commission has determined that once a request for an informal or formal hearing is received, certain elements of the *ex parte* restrictions in 10 CFR 2.780(a) will be applicable with respect to the subject matter of that hearing request. Under these restrictions, the Commission will communicate with interested persons/parties, the NRC staff, and the licensing board with respect to the issues covered by the hearing request only through docketed, publicly-available written communications and public meetings. Individual Commissioners may communicate privately with interested persons and the NRC staff; however, the substance of the communication shall be memorialized in a document which will be placed in the PDR and distributed to the licensing board and relevant parties.

VI. FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT: AVAILABILITY

The Commission has determined under NEPA and the Commission's regulations in 10 CFR Part 51, Subpart A, that this proposed design certification rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and therefore an environmental impact statement (EIS) is not required. The basis for this determination, as documented in the

environmental assessment, is that the amendment to 10 CFR Part 52 would not authorize the siting, construction, or operation of a facility using the System 80+ design; it would only codify the System 80+ design in a rule. The NRC will evaluate the environmental impacts and issue an EIS as appropriate in accordance with NEPA as part of the application(s) for the construction and operation of a facility.

In addition, as part of the environmental assessment for the System 80+ design, the NRC reviewed pursuant to NEPA, ABB-CE's evaluation of various design alternatives to prevent and mitigate severe accidents that was submitted in ABB-CE's "Technical Support Document for the System 80+." The Commission finds that ABB-CE's evaluation provides a sufficient basis to conclude that there is reasonable assurance that an amendment to 10 CFR Part 52 certifying the System 80+ design will not exclude a severe accident design alternative for a facility referencing the certified design that would have been cost beneficial had it been considered as part of the original design certification application. These issues are considered resolved for the System 80+ design.

The environmental assessment, upon which the Commission's finding of no significant impact is based, and the Technical Support Document for the System 80+ are available for examination and copying at the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC. Single copies are also available from Mr. Harry Tovmassian, Mailstop T-9 F33, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, (301) 415-6231.

VII. PAPERWORK REDUCTION ACT STATEMENT

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements. The public reporting burden for this collection of information is estimated to average ____ hours per licensee respondent, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Information and Records Management Branch (T 6-F33), U.S. Nuclear Regulatory Commission, Washington, DC. 20555-0001; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0151), Office of Management and Budget, Washington, DC 20503.

VIII. REGULATORY ANALYSIS

The NRC has not prepared a regulatory analysis for this proposed rule. The NRC prepares regulatory analyses for rulemakings that establish generic regulatory requirements. Design certifications are not generic rulemakings. Rather, design certifications are Commission approvals of specific nuclear power plant designs by rulemaking. Furthermore, design certification rulemakings are initiated by an applicant for a design certification, rather than the NRC. Preparation of a regulatory analysis in this circumstance would not be useful

because the design to be certified is proposed by the applicant rather than the NRC. For these reasons, the Commission concludes that preparation of a regulatory analysis is neither required nor appropriate.

IX. REGULATORY FLEXIBILITY ACT CERTIFICATION

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this proposed rulemaking will not have a significant economic impact upon a substantial number of small entities. The proposed rule provides standard design certification for a light water nuclear power plant design. Neither the design certification applicant, nor nuclear power plant licensees who reference this design certification rule, fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act, 15 U.S.C. 632, or the Small Business Size Standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121. Thus, this rule does not fall within the purview of the act.

X. BACKFIT ANALYSIS

The Commission has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule because these amendments do not impose requirements on existing 10 CFR Part 50 licensees. Therefore, a backfit analysis was not prepared for this rule.

List of Subjects in 10 CFR Part 52

Part 52 - Administrative practice and procedure, Antitrust, Backfitting, Combined license, Early site permit, Emergency planning, Fees, Incorporation by reference, Inspection, Limited work authorization, Nuclear power plants and reactors, Probabilistic risk assessment, Prototype, Reactor siting criteria, Redress of site, Reporting and recordkeeping requirements, Standard design, Standard design certification.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 553; the NRC proposes to adopt the following amendment to 10 CFR Part 52.

1. The authority citation for 10 CFR Part 52 continues to read as follows:

AUTHORITY: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1243, 1244, 1246, 1246, as amended (42 U.S.C. 5841, 5842, 5846).

2. In § 52.8, paragraph (b) is revised to read as follows:

§ 52.8 Information collection requirements: OMB approval.

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(b) The approved information collection requirements contained in this part appear in §§ 52.15, 52.17, 52.29, 52.45, 52.47, 52.57, 52.75, 52.77, 52.78, 52.79, Appendix A and Appendix B.

3. A new Appendix B to 10 CFR Part 52 is added to read as follows:

Appendix B To Part 52 - Design Certification Rule
for the System 80+ Design

1. Scope.

This Appendix constitutes the standard design certification for the System 80+ design, in accordance with 10 CFR Part 52, Subpart B. The applicant for certification of the System 80+ design was ABB-Combustion Engineering (ABB-CE).

2. Definitions.

As used in this part:

(a) *Design control document* (DCD) means the master document that contains the 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.

(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.

(d) *Tier 2** means the portion of the Tier 2 information which cannot be changed without prior NRC approval. This information is identified in the DCD.

(e) All other terms in this rule have the meaning set out in 10 CFR 50.2, 10 CFR 52.3, or Section 11 of the Atomic Energy Act of 1954, as amended, as applicable.

3. [Reserved].

4. Contents of the design certification.

(a) Both Tier 1 and Tier 2 of the System 80+ Design Control Document, ABB-CE, Revision 1, February 1995 are incorporated by reference. This incorporation by reference was 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 System 80+ DCD may be obtained 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, Washington, DC 20555, and for examination at the NRC Library, 11545 Rockville Pike, Rockville, Maryland 20582-2738.

(b) An 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 System 80+ DCD.

(c) If there is a conflict between the System 80+ DCD and either the application for design certification for the System 80+ design or NUREG-1462 "Final Safety Evaluation Report related to the Certification of the System 80+ Design," dated August 1994 (FSER), then the System 80+ DCD is the controlling document.

5. Exemptions and applicable regulations.

(a) The System 80+ design is exempt from portions of the following regulations, as described in the FSER (index provided in Section 1.6 of the FSER):

(1) Section VI(a)(2) of Appendix A to 10 CFR Part 100 - Operating Basis Earthquake Design Consideration;

(2) Section (b)(3) of 10 CFR 50.49 - Environmental Qualification of Post-Accident Monitoring Equipment;

(3) Section (f)(2)(iv) of 10 CFR 50.34 - Separate Plant Safety Parameter Display Console;

(4) Section (f)(2)(viii) of 10 CFR 50.34 - Post-Accident Sampling for Hydrogen, Boron, Chloride, and Dissolved Gases; and

(5) Section (f)(3)(iv) of 10 CFR 50.34 - Dedicated Containment Penetration.

(6) Section III.A.1.(a) of Appendix J to 10 CFR 50 - Containment Leakage Testing; and

(7) Sections (f)(2)(vii), (viii), (xxvi), and (xxviii) of 10 CFR 50.34 - Accident Source Terms

(b) Except as indicated in paragraph (c) of this Section, the regulations that apply to the System 80+ design are those regulations in 10 CFR Parts 20, 50, 73, and 100 [August 1994], that are applicable and technically relevant, as described in the FSER.

(c) In addition to the regulations specified in paragraph (b) of this Section, the following regulations are applicable for purposes of 10 CFR 52.48, 52.54, 52.59 and 52.63:

(1) In the standard design, the effects of intersystem loss-of-coolant accidents shall 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.

(2)(i) Piping systems associated with pumps and valves subject to the test requirements set forth in 10 CFR 50.55a(f) shall be designed to allow for (A) Full flow testing of pumps and check valves at maximum design flow, and

(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 operate 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 must submit, as part of the application:

(A) a program for testing check valves that incorporates the use of 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.

(3) 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) Provisions for independent backup manual controls and displays for critical safety functions in the control room.

(4) 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 safe shutdown, following a loss of the normal power supply and reactor trip.

(5) The electric power system of the standard 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 bus.

(6)(i) The requirements of 10 CFR 50.48(a)⁸ 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 provision in paragraph (i) of this section, all structures, systems, and components important to safety in the standard design shall 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 re-entry into that 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;

⁸For the standard design, the footnote reference in 10 CFR 50.48(a) to Branch Technical Position Auxiliary Power Conversion System Branch BTP APCSB9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," will be to the July, 1981 version.

(B) Smoke, hot gases, or fire suppressant will not migrate from one fire area into another to an 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 remains free of fire damage.

(7) The standard design must include and an applicant for a combined license which references this standard design certification rule must 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.

(8) 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.

(9) 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.

(10)(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 containment liner and other structural members.

(ii) The features required by paragraph (i) of this section, in combination with other features, shall 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.

(11) 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.

(12) 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.

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

(14)(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.

(15) The standard design must include a best-estimate, systematic evaluation of the 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.

6. Issue resolution for the design certification.

(a) All nuclear safety issues associated with the information in the FSER or DCD are resolved within the meaning of 10 CFR 52.63(a)(4).

(b) All environmental issues associated with the information in the NRC's Environmental Assessment for the System 80+ design or the severe accident design alternatives in Revision 1 of the Technical Support Document for the

System 80+ dated January 1995 are resolved within the meaning of 10 CFR 52.63(a)(4).

7. Duration of the design certification.

This design certification may be referenced for a period of 15 years from [insert date 30 days after publication in the Federal Register], except as provided for in 10 CFR 52.55(b) and 52.57(b). This design certification remains valid for an applicant or licensee that references this certification until their application is withdrawn or their license expires, including any period of extended operation under a renewed license.

8. Change process.

(a) Tier 1 information.

(1) Generic (rulemaking) changes to Tier 1 information are governed by the requirements in 10 CFR 52.63(a)(1).

(2) Generic changes to Tier 1 information are applicable to all plants referencing the design certification as set forth in 10 CFR 52.63(a)(2).

(3) Changes from Tier 1 information that are imposed by the Commission through plant-specific orders are governed by the requirements in 10 CFR 52.63(a)(3).

(4) Exemptions from Tier 1 information are governed by the requirements in 10 CFR 52.63(b)(1).

(b) Tier 2 information.

(1) Generic changes to Tier 2 information are governed by the requirements in 10 CFR 52.63(a)(1).

(2) Generic changes to Tier 2 information are applicable to all plants referencing the design certification as set forth in 10 CFR 52.63(a)(2).

(3) While the design certification is in effect under §§ 52.55 or 52.61, unless:

(i) A modification is necessary to secure compliance with the Commission's regulations applicable and in effect at the time the certification was issued, or to assure adequate protection of the public health and safety or the common defense and security; and

(ii) Special circumstances as defined in 10 CFR 50.12(a) are present, the Commission may not impose new requirements by plant-specific order on Tier 2 information of a specific plant referencing the design certification.

(4) An applicant or licensee who references the design certification may request an exemption from Tier 2 information. The Commission may grant such a request only if it determines that the exemption will comply with the requirements of 10 CFR 50.12(a). The granting of an exemption on request of an applicant must be subject to litigation in the same manner as other issues in the construction permit, operating license, or combined license hearing.

(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, or an unreviewed safety question as defined in paragraphs (b)(5)(ii) or (b)(5)(iii) of this section. When evaluating the proposed change, an applicant or licensee must consider all matters described in the DCD, including generic issues and shutdown risk for all

postulated accidents including severe accidents. These 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).

(ii) A proposed departure from Tier 2 information, other than severe accident issues identified in Section 19.11 including appendices 19.11A through 19.11L of the DCD, 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

(C) The margin of safety as defined in the basis for any technical specification is reduced.

(iii) A proposed departure from information associated with severe accident issues identified in Section 19.11 of the DCD including appendices 19.11A through 19.11L, 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.

(iv) Departures from Tier 2 information made in accordance with Section 8(b)(5) above do not require an exemption from this design certification rule.

(c) Other requirements of this design certification rule.

An applicant or licensee who references the design certification may not depart from this rule's requirements, other than Tier 1 or 2 information, other than by an exemption in accordance with 10 CFR 50.12.

9. Records and Reports.

(a) *Records.*

(1) The applicant for this design certification must maintain a copy of the DCD that includes all generic changes to Tier 1 and Tier 2 information.

(2) An applicant or licensee that references this design certification must maintain records of all changes to and departures from the DCD pursuant to Section 8 of this appendix. Records of changes made pursuant to Section 8(b)(5) must include a written safety evaluation which provides the bases for the determination that the proposed change does not involve an unreviewed safety question, a change to Tier 1 or Tier 2* information, or a change to the technical specifications.

(b) *Reports.* An applicant or licensee that references this design certification must submit a report to the NRC, as specified in 10 CFR 50.4, containing a brief description of any departures from the DCD, including a summary of the safety evaluation of each. An applicant or licensee must also submit updates to the DCD to ensure that the DCD contains the latest material developed for both Tier 1 and 2 information. The requirements of 10 CFR 50.71(e) for safety analysis reports shall apply to these updates. These reports and updates must be submitted at the frequency specified below:

(1) During the interval from the date of application to the date of issuance of either a construction permit under 10 CFR Part 50 or a combined license under 10 CFR Part 52, the report and any updates to the DCD may be submitted along with amendments to the application.

(2) During the interval from the date of issuance of either a construction permit under 10 CFR Part 50 or a combined license under 10 CFR Part 52 until the applicant or licensee receives either an operating license under 10 CFR Part 50 or the Commission makes its findings under 10 CFR 52.103, the report must be submitted quarterly. Updates to the DCD must be submitted annually.

(3) Thereafter, reports and updates to the DCD may be submitted annually or along with updates to the safety analysis report for the facility as required by 10 CFR 50.71(e), or at such shorter intervals as may be specified in the license.

(c) *Retention Period.* The DCD and the records of changes to departures from the DCD must be maintained until the date of termination of the construction permit or license.

Dated at Rockville, Maryland, this ____ day of _____, 1995.

For the Nuclear Regulatory Commission.

James M. Taylor,
Executive Director for Operations

ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL ASSESSMENT
RELATING TO THE CERTIFICATION OF THE
SYSTEM 80+ STANDARD NUCLEAR PLANT DESIGN
DOCKET NO. 52-002

1 INTRODUCTION AND SUMMARY

The U.S. Nuclear Regulatory Commission (hereinafter referred to as the NRC or the Commission) is considering whether to issue a design certification for the System 80+ standard nuclear plant design (System 80+). The design certification would be in the form of a rule amending Part 52 of Title 10 of the Code of Federal Regulations (10 CFR Part 52). To comply with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Commission must consider the environmental impacts of issuing this amendment to 10 CFR Part 52. In addition, the Commission decided to consider severe accident mitigation design alternatives (SAMDAs) as part of this environmental assessment (EA) to resolve these requirements for NEPA on a generic basis for the System 80+ design. The EA for the proposed rule is contained herein and is prepared in accordance with the NEPA and 10 CFR Part 51.

This EA only addresses the environmental impacts of issuing a design certification rule for System 80+, and addresses SAMDAs for the System 80+ design. The environmental impacts of construction and operation of a facility at a particular site will be evaluated as part of the application(s) for siting, construction and operation of that facility.

In an application dated March 30, 1989, Combustion Engineering, Incorporated (CE) asked the NRC to certify the System 80+ design. The application was made in accordance with the procedures of Appendix O to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR Part 50). In a letter to the NRC dated August 21, 1989, Combustion Engineering, Inc. requested that its application be considered for design approval and subsequent design certification pursuant to 10 CFR Part 52. The application was docketed on May 1, 1991, and assigned Docket Number 52-002. Combustion Engineering, Inc. notified the NRC by letter dated May 26, 1992, that it is a wholly owned subsidiary of Asea Brown Boveri, Inc., and the appropriate abbreviation for the company is ABB-CE. Therefore, throughout this report Combustion Engineering, Inc. is referred to as ABB-CE.

The NRC has determined that the issuance of the proposed design certification rule is not a major Federal action significantly affecting the quality of the human environment, and therefore, has decided not to prepare an environmental impact statement (EIS) in connection with this action. The finding of no significant impact (FONSI) is based on the fact that the certification rule itself would not authorize the siting, construction or operation of the System 80+ design; it would only codify the System 80+ design in a rule that could be referenced in a construction permit (CP), early site permit (ESP), combined license (COL), or operating license (OL) application. Further, because the action is a rule, there are no resources involved which would have alternative uses.

The NRC also reviewed, pursuant to the NEPA, ABB-CE's evaluation of design alternatives to prevent and mitigate severe accidents. Based on the review, the NRC finds that the evaluation provides a sufficient basis to conclude that

there is reasonable assurance that an amendment to 10 CFR Part 52 certifying the System 80+ design will not exclude SAMDAs for a future facility that would have been cost beneficial had they been considered as part of the original design certification application. These issues are considered resolved for the certified System 80+ design.

2 THE NEED FOR THE PROPOSED ACTION

The Commission has long sought the safety benefits of commercial nuclear power plant standardization, as well as the early resolution of design issues and finality of design issue resolution. The NRC plans to achieve these goals by certification of standard plant designs. Subpart B to 10 CFR Part 52 allows for certification by rule of an essentially complete nuclear plant design.

The proposed action would amend 10 CFR Part 52 to certify the System 80+ design. The amendment would allow prospective applicants for a combined license (COL) under Part 52 or for a construction permit under Part 50 to reference the certified System 80+ design. Those portions of the System 80+ design included in the scope of the design certification would not be subject to further regulatory review or approval. In addition, the amendment would resolve the issue of consideration of SAMDAs for any future facilities that reference the System 80+ design.

3 ALTERNATIVES TO THE PROPOSED ACTION

The alternatives to certifying the System 80+ design in an amendment to 10 CFR Part 52 are either (1) no action approving the design or (2) issuing a final design approval (FDA), but not certifying the design. These alternatives in and of themselves would not have a significant impact affecting the quality of the human environment because they do not authorize the siting, construction, or operation of a facility.

In the first case, the design would not be approved. Therefore, a facility to be built as a System 80+ would be required to be licensed under 10 CFR Part 50 or 10 CFR Part 52, Subpart C, as a custom plant application. All design issues would have to be considered as part of each application to construct and operate a System 80+ facility at a particular site. This alternative would not achieve the benefits of standardization, provide early resolution of design issues, or provide finality of design issue resolution.

In the second case, the System 80+ would be issued an FDA under 10 CFR Part 52, Appendix O, but the design would not be certified in a rulemaking. Therefore, although the NRC would have approved the design, the design could be modified and thus require re-evaluation as part of each application to construct and operate a System 80+ facility at a particular site. This alternative would provide early resolution of issues, but would not achieve the benefits of standardization or provide finality of design issue resolution.

The NRC sees no advantage in either of the alternatives compared to the design certification rulemaking proposed for the System 80+. Although neither the alternatives nor the proposed design certification rulemaking would have a

significant impact affecting the quality of the human environment in and of themselves, the rulemaking provides for standardization, as well as early resolution of design issues and finality of design issue resolution for design issues that are within the scope of the design certification, including SAMDAs. Therefore, the NRC concludes that the alternatives to rulemaking would not achieve the objectives of the Commission intended by certification of the System 80+ design pursuant to 10 CFR Part 52, Subpart B.

3.1 Severe Accident Design Alternatives

The Commission decided to evaluate design alternatives for severe accidents as part of the design certification for the System 80+ design, consistent with its objectives of achieving early resolution of issues for the design and standardization. The Commission, in a 1985 policy statement, defined the term "severe accident" as those events which are "beyond the substantial coverage of design basis events" and includes those for which there is substantial damage to the reactor core whether or not there are serious offsite consequences. Design basis events are considered to be those analyzed in accordance with the NRC's Standard Review Plan (NUREG-0800) and documented in Chapter 15 of the System 80+ Design Control Document (DCD).

As part of its design certification application, ABB-CE performed a probabilistic risk assessment (PRA) for the System 80+ design to help (1) identify the dominant severe accident sequences and associated source terms for the design; (2) modify the design, based on PRA insights, to prevent or mitigate severe accidents and reduce the risk of severe accidents; and (3) provide a basis for concluding that all reasonable steps have been taken to reduce the chances of occurrence, and to mitigate the consequences, of severe accidents. ABB-CE's analysis is documented in Chapter 19 of the System 80+ Standard Safety Analysis Report - Design Certification (System 80+ CESSAR-DC).

In addition to considering alternatives to the rulemaking process as discussed in Section 3, applicants for reactor design approvals or construction permits must also consider alternative design features for severe accidents based on (1) the requirements of 10 CFR Part 50 and (2) a court ruling relating to NEPA. These requirements can be summarized as follows:

- 10 CFR 50.34(f)(1)(i) requires the applicant to perform a plant/site specific probabilistic risk assessment, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant.
- The U.S. Court of Appeals decision, in Limerick Ecology Action v. NRC, 869 F.2d 719 (3rd Cir. 1989), effectively requires the NRC to include consideration of certain severe-accident-mitigation design alternatives (SAMDAs) in the environmental impact review performed as part of the operating license application.

Although these two requirements are not directly related, the purpose is the same: to consider alternatives to the proposed design, to evaluate potential

alternatives for improvements in the plant design for increased safety performance during severe accidents, and to prevent viable alternatives from being foreclosed. It should be noted that the Commission is not required to consider alternatives to the design in this EA on the proposed rulemaking; however, as a matter of discretion, the Commission has determined that consideration of SAMDAs is consistent with the intent of 10 CFR Part 52 for early resolution of issues and enhancing the benefits of standardization.

In its decision in Limerick, the Court of Appeals for the Third Circuit expressed its opinion that it was likely that evaluation of SAMDAs for NEPA purposes would be difficult to perform on a generic basis. However, the NRC has determined that generic evaluation of SAMDAs for the System 80+ standard design is warranted because (1) the design and construction of all plants referencing the certified System 80+ design will be governed by the rule certifying the design and design alternatives will be more difficult to implement; and (2) the site parameters specified in the rule establish bounding consequence profiles. Should the actual site parameters for a particular site significantly exceed those assumed in this EA, SAMDAs would have to be re-evaluated in the site-specific environmental report and EIS.

ABB-CE initially submitted its response to 10 CFR 50.34(f) in Appendix A to Chapter 19 of CESSAR-DC as part its application for a final design approval (FDA) and subsequent design certification for the System 80+. The NRC issued an FDA for the System 80+ in July 1994, and provided its evaluation of Appendix A to Chapter 19 of CESSAR-DC in FSER Section 19.4. Subsequently, as part of its preparation of the DCD for the design certification rulemaking, ABB-CE updated and relocated the information in Appendix A to Chapter 19 of CESSAR-DC to the "Technical Support Document [TSD] for Amendments to 10 CFR Part 51 Considering Severe Accidents Under NEPA For Plants Of System 80+ Design", dated January 5, 1995. ABB-CE submitted the TSD to meet the Commission's requirement to consider SAMDAs as part of the design certification application.

3.2 Estimate of Risk for the System 80+

In response to 10 CFR 50.34(f)(1)(i), ABB-CE provided an evaluation of the System 80+ design improvements in Appendix A to Chapter 19 of CESSAR-DC. ABB-CE's evaluation of risk was based on the risk-reduction potential for internal events only. The limited scope was a consequence of ABB-CE's use of alternative analyses for external events. The staff's evaluation of this approach to external events is in FSER Section 19.4.6. The staff's evaluation of design alternatives considering risk from external events is discussed in section 3.5.5 of this environmental assessment.

In estimating the risk, ABB-CE used the meteorological and population data from the reference site described in the "Advanced Light Water Reactor Utility Requirements Document, Volume II, ALWR Evolutionary Plant," Chapter 1, Appendix A, PRA Key Assumptions and Groundrules (KAG), Revision 3, EPRI, November 1991. The data from this reference site was developed by EPRI to conservatively bound 80% of existing reactor sites in the United States.

ABB-CE based its risk estimate on 4 major elements: (1) the mean value core damage frequency (CDF) estimate from the Level 1 PRA described in Chapter 19 of CESSAR-DC (2) source terms for each release class (RC) determined using a plant-specific version of the NRC-developed XSOR code; (3) offsite consequences for the reference site calculated for each RC using the NRC-developed MACCS code; and (4) the MAAP code used to model accident progression, containment performance, and time and energy of release. A summary of 23 RCs appears in Table 4-1 in the TSD, and a ranking of the RCs based on risk to the general population appears in Table 4-2. ABB-CE's estimate of the cumulative offsite risk of severe accidents occurring in a System 80+ standard plant to the population within 50 miles of the reference site is 0.17 person-Sv (17 person-rem). A cumulative risk of 0.17 person-Sv (17 person-rem) is considered by the NRC to be low, and can be attributed to ABB-CE's efforts to minimize initiators by incorporating results of the PRA into the System 80+ design.

As discussed in Chapter 19.1 of the FSER, the NRC finds the approach used by ABB-CE for assessing core damage frequency (CDF) to be logical and sufficient for describing and quantifying potential core damage sequences. The NRC reviewed ABB-CE's source term estimates for the major RC's and found these predictions to be in reasonable agreement with estimates from NUREG-1150. ABB-CE submitted additional analyses using the NRC-developed MELCOR code to verify results obtained using the MAAP code. The NRC performed a number of independent severe accident confirmatory calculations described in Chapter 19.2 of the FSER. On the basis of these ABB-CE and NRC verification calculations, the NRC concludes that ABB-CE's characterization of accident progression and containment performance is acceptable. The NRC considers ABB-CE's use of the NRC-developed MAACS code in conjunction with the data from the reference site to be an acceptable basis for estimating the consequences associated with severe-accident releases. In summary, the NRC finds the methods and computer codes used in estimating the total risk to be acceptable, and the results to be reasonable.

3.3 Identification of Potential Design Alternatives

ABB-CE's evaluation of potential design improvements in response to the requirements of 10 CFR 50.34(f)(1)(i) also gives a technical basis for the NRC staff to evaluate the SAMDAs, as required by the *Limerick* decision. The NRC staff's review of ABB-CE's evaluation is presented below.

By surveying previous industry- and NRC-sponsored studies of features to prevent and mitigate severe accidents, ABB-CE prepared a set of potential severe-accident design alternatives for the System 80+ and developed a composite list of 62 potential design alternatives.

ABB-CE summarized 40 potential design alternatives for risk reduction cost-benefit analysis since 22 of the initial 62 design alternatives screened were modifications already incorporated into the System 80+ design. However, four design alternatives (26, 44, 48, and 54 of TSD Table 4-5) also incorporated into the design were retained in the set of 40 design alternatives evaluated because they address important generic safety issues. These 40 design

alternatives were divided into 5 groups. The first 4 groups prevent core damage by:

- A) Increasing primary and secondary boundary integrity,
- B) Increasing decay heat removal reliability,
- C) Improving electrical power reliability,
- D) Reducing in the core damage frequency (CDF);

The last group protects the containment or reduces the releases:

- E) Reducing radioactive releases.

ABB-CE quantified the cost benefit ratio for 27 of the 40 design alternatives evaluated as reflected in TSD Table 5-1. The remaining 13 design alternatives were not quantified because 4 design alternatives were already implemented in the design and 9 design alternatives had very high costs or marginal risk reduction potential for the modification.

3.4 Description of Design Alternatives

The 40 design alternatives evaluated by ABB-CE are described in Section 4.7 of the TSD. The 27 design alternatives selected by ABB-CE for cost-benefit evaluation are summarized below. The numbers in parentheses correspond to the design alternative number in the TSD.

- (1) 100-Percent Steam Generator (SG) Inspection (A2) — Perform eddy-current testing on 100 percent of the SG tubes each refueling outage in order to reduce the frequency of steam generator tube rupture (SGTR) events.
- (2) Secondary Side Guard Pipes (A6) — Install guard pipes around the secondary piping between the containment and the main steam isolation valves in order to reduce the potential for multiple SGTRs given a main steam line break.
- (3) Alternative Batteries and Emergency Feedwater System (EFWS) (B1) — Increase the capacity of the EFWS-related batteries so that loss of decay heat removal due to battery depletion is eliminated.
- (4) 12-Hour Batteries (B2) — Increase the battery size to accommodate a 12-hour rather than 8-hour duty cycle, thereby reducing the probability of failure to recover offsite power before core damage.
- (5) Alternative Pressurizer Auxiliary Spray (B3) — Increase the redundancy and diversity of the pressurizer spray valves and charging pump, so that failures of the auxiliary spray to successfully depressurize the primary system are eliminated in SGTR sequences.
- (6) Alternative High-Pressure Safety Injection (HPSI) (B4) — Provide an alternative or improved HPSI system, so that all core-damage sequences involving HPSI failures are eliminated.

- (7) Alternative Reactor Coolant System Depressurization (B5) — Increase the reliability and diversity of the safety depressurization valves so that all sequences in which the safety depressurization system fails are essentially eliminated.
- (8) Diesel-Driven Safety Injection (SI) Pumps (B6) — Replace two of the electric SI pumps with diesel-driven pumps to reduce common-cause failure of all four pumps and the risk from station blackout (SBO).
- (9) Extended In-Containment Refueling Water Storage Tank (IRWST) Source (B8) — Provide a separate borated water storage tank and pump for refilling the IRWST, thereby reducing the potential for IRWST depletion in unisolated SGTR events.
- (10) Third Diesel Generator (DG) (C1) — Add a third, swing DG to lower the probability of SBO events and provide improved operational flexibility.
- (11) Tornado-protection for Combustion Turbine (C2) — Provide tornado protection for the gas turbine generator and associated support systems to prevent loss of the system due to tornado and high-wind events.
- (12) Fuel Cells (C3) — Use fuel cells in lieu of conventional lead-acid batteries, thereby extending the availability of dc power.
- (13) Hookup for Portable Generators (C4) — Provide temporary connections so that portable generators could be used to power the turbine-driven EFW pump after the station batteries are depleted.
- (14) Alternative Anticipated Transient Without Scram (ATWS) Pressure Relief Valves (D1) — Provide a system of relief valves that can prevent equipment damage from a primary coolant pressure spike in an ATWS sequence.
- (15) ATWS Injection System (D2) — Modify the reactor coolant pump seal cooling system to inject boron using existing sources of boron and existing piping and valves.
- (16) Diverse Plant Protection System (PPS) (D3) — Provide a third, diverse PPS to resolve instrumentation and control diversity concerns and reduce the frequency of ATWS events.
- (17) Alternative Containment Spray System (CSS) (E1) — Provide an independent CSS as a backup to the front-line CSS, so that frequency of late steam overpressure failures is reduced (added to design).
- (18) Filtered Containment Vent (E2) — Add a filtered containment vent similar to the multi-venturi scrubbing systems implemented in some plants in Europe to eliminate the potential for late containment overpressure failures.

- (19) Alternative Concrete Composition (E3) — Use an advanced concrete composition in the reactor cavity or increase the thickness of the basemat concrete so that basemat melt-through is prevented (added to design).
- (20) Reactor Vessel Exterior Cooling (E4) — Provide the capability to submerge the reactor vessel lower head in water during severe accidents in order to enhance heat removal from the lower head and prevent melt-through of the lower head.
- (21) Alternative Hydrogen Igniters (E5) — Provide dedicated batteries for the hydrogen mitigation system (HMS) in order to improve system reliability and further reduce the potential for containment failure from hydrogen combustion.
- (22) Passive Autocatalytic Recombiners (E6) — Provide passive autocatalytic recombiners in addition to the existing HMS to provide improved hydrogen control, particularly in SBO sequences.
- (23) Main Steam Safety Valve (MSSV) and Atmospheric Dump Valve (ADV) Scrubbing (E7) — Route the discharge from the MSSVs and ADVs through a structure where a water spray would condense the steam and remove most of the fission products, thereby reducing the consequences associated with SGTR.
- (24) Alternative Containment Monitoring System (E8) — Improve the containment isolation valve position indication so that risk from containment bypass sequences and interfacing-systems loss-of-coolant accidents is eliminated.
- (25) Cavity Cooling (E9) — Modify the reactor cavity configuration and the flow paths between the IRWST and reactor cavity so that heat from the reactor vessel lower head or ex-vessel core debris could be transported passively to the IRWST, thereby reducing the potential for reactor vessel failure, ex-vessel steam explosions, and core-concrete interactions.
- (26) Water-Cooled Rubble Bed (E12) — Provide a bed of refractory pebbles that would impede the flow of molten corium to the concrete drywell structures and increase the available heat transfer area, thereby enhancing debris coolability.
- (27) Refractory-Lined Crucible (E13) — Provide a ceramic-lined crucible and cooling system in the reactor cavity in order to eliminate the potential for basemat melt-through.

The NRC staff has reviewed the set of potential design alternatives identified by ABB-CE in the TSD and finds the set to constitute a reasonable range of design alternatives. The list includes all alternatives identified in the NRC containment performance improvement (CPI) program and in the NRC review of SAMDAs for the Limerick Generating Station, that would be applicable to

System 80+. The NRC notes that the set of design alternatives is not all inclusive, since additional, possibly even less expensive, design alternatives can always be postulated. However, the NRC concludes that the benefits of any additional modifications are unlikely to exceed the benefits of the modifications evaluated and that the alternative improvements would not likely cost less than the least expensive alternatives evaluated, when the subsidiary costs associated with maintenance, procedures, and training are considered. On this basis, the NRC concludes that the set of potential design alternatives identified by ABB-CE is acceptable.

3.5 Risk Reduction Potential of Design Alternatives

3.5.1 ABB-CE's Evaluation of Risk Reduction Potential

ABB-CE used the reduction in cumulative risk of accidents occurring during the life of the plant as the basis for estimating the benefit that could be derived from plant improvements. Estimates of risk reduction were developed by determining the approximate effect of each design alternative on the frequency of the various RCs in the PRA. For those design alternatives that were preventative (reduced CDF), ABB-CE assumed that the design alternative would completely eliminate the sequence it addresses. In addition, ABB-CE conservatively assumed that each design alternative when employed worked perfectly (i.e., zero failure rate).

The NRC staff reviewed ABB-CE's bases for estimating the risk reduction associated with the various design improvements. The NRC staff notes that considerable judgement was exercised in estimating the risk reduction potential, however the rationale and assumptions on which the risk reductions are based appear to be sound.

3.5.2 NRC Staff Evaluation of Risk Reduction Potential

In view of the small residual risk for the System 80+ (0.17 person-Sv (17 person-rem)), rather than performing an independent assessment of the risk reduction potential of each of the 40 System 80+ design alternatives, the NRC staff used a screening-type approach for identifying the most promising. The set of potential design alternatives was initially screened by the NRC staff using a bounding assumption that each improvement would eliminate all the risk from internally-initiated events for the System 80+ (0.17 person-Sv (17 person-rem) for a 60-year life). This approach conservatively tends to over-estimate the benefits derived from each design alternative. For those design alternatives whose cost benefit ratio was found to be within a factor of 10 of the \$100,000/person-Sv-averted (\$1000/person-rem-averted) criterion in the screening assessment, the NRC staff applied a more design-specific assessment, described below in Section 3.5.3 of this report.

3.5.3 Cost of SAMDAs

ABB-CE determined the approximate costs for each design alternative, using the methodology described in Section 4.3 of the TSD. The cost estimate for each design alternative represents the incremental costs that would be incurred in incorporating that design alternative in a new plant. These costs were

intentionally biased on the low side, but all known or reasonably expected costs were accounted for. However any annual costs associated with operation, testing, maintenance, and training were conservatively omitted. For design alternatives that reduced the CDF, ABB-CE reduced the costs of the design alternative by an amount proportional to the averted onsite costs (AOCs).

The NRC staff reviewed the bases for ABB-CE's cost estimates and find them reasonable. For certain design alternatives, the NRC staff also compared ABB-CE's cost estimate with estimates developed elsewhere for similar improvements, even though the bases for some were different. The NRC staff considered cost estimates developed in the evaluation of design improvements for GESSARII (NUREG-0979, Supplement 4, and the review of SAMDAs for Limerick and Comanche Peak (NUREG-9074 and -0775, respectively). The NRC staff noted a number of inconsistencies, such as 12-hour batteries (\$300K) and reactor cavity cooling system (\$50K) were lower than expected. However, the costs for other improvements were higher than expected, such as alternative concrete composition (\$5 million) and refractory-lined crucible (\$108 million). Nevertheless, the NRC staff views ABB-CE's approximate cost estimates as adequate, given the uncertainties surrounding the underlying costs estimates, and the level of precision necessary given the greater uncertainty inherent on the benefit side with which these costs were compared.

3.5.4 Cost-Benefit Comparison

ABB-CE performed a cost-benefit comparison to determine whether any of the design alternatives could be justified. The costing methodology and assumptions used by ABB-CE are described in the TSD and in CESSAR-DC Appendix 19A. The benefit of a particular design alternative was evaluated in terms of reduced risk to the general public in units of person-Sv/year (person-rem/year). The costs of a particular design alternative is a on-time initial capital cost in dollars. In order to compare the benefits with the costs, ABB-CE used the \$100,000/person-Sv (\$1000/person-rem) criterion and multiplied by 60 years (plant lifetime), to convert the risk reduction into dollars. The cost-benefit ratio for each of the 27 design alternatives are shown in Table 5-1. As shown in Table 5-1 in the TSD, the costs of the design alternatives range from about \$92.6 billion/person-Sv-averted (\$926 million/person-rem-averted) to about \$2.7 million/person-Sv-averted (\$27K/person-rem-averted). Consistent with current NRC practice, ABB-CE used a screening criterion of \$100,000/person-Sv-averted (\$1000/person-rem-averted) to identify whether any of the design alternatives could be cost effective. On this basis ABB-CE concluded that no additional design alternatives are warranted.

Section 4.1 of the TSD describes how AOCs were incorporated into the cost benefit equation. In this section ABB-CE states that AOCs are included in the cost-benefit analyses of those design alternatives that reduce core damage frequency (CDF) as reductions in the cost of the design alternatives.

As discussed above in Section 3.5.2 of this report, the NRC staff used a screening-type approach for identifying the most promising design alternatives, and performed a more detailed assessment for only those whose cost-benefit ratio was found to be within a factor of 10 of the \$100,000/person-Sv (\$1000/person-rem) criterion. On the basis of initial

screening, only 2 design alternatives were retained for further analysis by the NRC staff:

- Hookup for Portable Generators (C4)- Provide temporary connections so that portable generators could be used to power the turbine-driven EFW pump after the station batteries are depleted; and
- Cavity Cooling (E9) - Modify the reactor cavity configuration and the flow paths between the IRWST and reactor cavity so that heat from the reactor vessel lower head or ex-vessel core debris could be transported passively to the IRWST, thereby reducing the potential for reactor vessel failure, ex-vessel steam explosions, and core-concrete interactions.

The NRC staff notes that for the two design alternatives identified in the screening, the assumption that all residual risk would be eliminated is overly conservative, since these improvements will have little impact on the SGTR sequences that dominate risk for the System 80+. ABB-CE's risk reduction profiles are judged by the NRC staff to be more appropriate for these design alternatives which are \$10,000 and \$50,000, respectively. In addition, relatively large costs associated with first-of-a-kind engineering are still to be anticipated for many of the design alternatives, and would need to be integrated within the existing design. The introduction of a new system will trigger a series of related requirements, such as incremental training, maintenance, procedural changes, and possible licensing requirements. These are all legitimate costs that require consideration in a comprehensive cost estimate, however were conservatively omitted from both the NRC staff's and ABB-CE's cost-benefit analyses. The staff concludes that none of the design alternatives evaluated would be cost effective given the low residual risk for the System 80+ (0.17 person-Sv (17 person-rem)) and the \$100,000/person-Sv-averted (\$1000/person-rem-averted) criterion.

3.5.5 Further Considerations

The NRC staff has reviewed the assumptions on which this conclusion is based and has considered the effect of uncertainties in estimating core-damage frequency, the use of alternative cost-benefit criteria, and the inclusion of external events within the scope of the analysis.

On the basis of uncertainty analyses performed by ABB-CE for the Level 1 PRA (see Chapter 19.1.3.1.3 of the FSER), the 95th percentile CDF is approximately 5×10^{-6} per reactor year. This is roughly a factor of 3 higher than the mean value on which the cost-benefit analysis is based, but still very low compared to operating plants and also in absolute terms. Even if the benefits of the various design alternatives were requantified on the basis of this upper bound value, none of the design alternatives would become cost-beneficial. This would remain the case even if the cost-benefit criteria was increased by a factor of 10 to \$1 million/person-Sv-averted (\$10,000/person-rem-averted).

If external events are included, the estimate of the residual risk for the System 80+ could be one or two orders of magnitude higher than considered.

However, even at two orders of magnitude higher, design alternatives that cost more than \$1.7 million would not be cost effective, even if all risk was eliminated. Using ABB-CE's cost estimates, the NRC staff examined those design alternatives that cost less than \$2 million, and found that they all have a relatively low risk reduction potential, would eliminate only 10% of the residual risk from internal events, and are not expected to be effective in eliminating the added risk from external events (e.g., seismic events). As a result, none of these design alternatives are expected to be cost effective when their actual effectiveness in reducing risk is taken into account.

The NRC staff concludes that given the significant margins in the results of the cost-benefit analysis, the findings would be unchanged even considering the factor discussed above.

3.6 Conclusions

As discussed in this report, ABB-CE has made extensive use of the results of PRA to arrive at a final System 80+ design. As a result, the estimated CDF and risk calculated for the System 80+ is very low, both relative to operating plants and in absolute terms. The low CDF and risk for the System 80+ is a reflection of ABB-CE's efforts to systematically minimize the effect of initiators and/or sequences that have been important contributors to CDF in previous pressurized water reactor PRAs. This has been done largely through the incorporation of a number of hardware improvements in the System 80+ design that both reduce CDF and mitigate the consequences of a core-damage event.

Because the System 80+ design already contains numerous plant features oriented toward reducing CDF and risk, the benefit and risk reduction potential of additional plant improvements is significantly reduced. This is true for both internally and externally initiated events. For example, the System 80+ seismic design basis (0.3 g. safe shutdown earthquake) has been shown to result in significant ability to withstand earthquakes well beyond the design basis, as characterized by a high-confidence-low-probability-of-failure value of about 0.7 g. Moreover, with the features already incorporated in the System 80+ design, the ability to estimate CDF and risk approached the limitation of probabilistic techniques. Specifically, when CDFs of 1 in 100,000 or 1,000,000 years are estimated in a PRA, it is the area of the PRA where modeling is least complete, or supporting data is sparse or even non-existent, that could actually be the more important contributors to risk. Areas not modeled or incompletely modeled include human reliability, sabotage, rare initiating events, construction or design errors, and systems interactions. Although improvements in the modeling of these areas may introduce additional contributors to CDF and risk, the NRC staff does not expect that additional contribution would change anything in absolute terms.

In 10 CFR 50.34(f)(1)(i), the NRC staff requires an applicant to perform a plant or site-specific PRA, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant. The NRC staff concludes that the System 80+ PRA and ABB-CE's use of the insights of this study to improve the design of the System 80+ meet this requirement. The

NRC staff concurs with ABB-CE's conclusion that none of the potential design alternatives evaluated are justified based on cost-benefit considerations. It is further concluded that it is unlikely that any other design changes would be justified on the basis of person-rem exposure considerations, because the estimated CDFs would remain very low on an absolute scale.

4 THE ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

The issuance of an amendment to 10 CFR Part 52 certifying the System 80+ design would not constitute a significant environmental impact. The amendment would only codify the results of the NRC's review and approval of the System 80+ design as defined in the FSER, dated August 1994 (NUREG-1462). Further, because the action is a rule, there are no resources involved that would have alternative uses.

In Section 3 of this EA, the NRC staff reviewed alternatives to design certification rulemaking and alternative design features related to the prevention and mitigation of severe accidents. Consideration of alternatives under NEPA were necessary for two reasons: 1) to show that the design certification rule is the appropriate course of action, and (2) to ensure that there are no cost-beneficial design changes relating to the prevention and mitigation of severe accidents that were excluded from the design, as codified in the design certification rule. The NRC concludes that the alternatives to design certification did not provide for resolution of issues as did the proposed design certification rulemaking.

The design certification rulemaking is in keeping with the Commission's intent in the Standardization and Severe Accident Policy Statements, and 10 CFR Part 52, to make future plants safer than the current generation plants, to achieve early resolution of licensing issues, and to enhance the safety benefits of standardization. Through its own independent analysis, the NRC also concludes that ABB-CE adequately considered an appropriate set of SAMDAs and none were found to be cost-beneficial. Although no design changes resulted from the SAMDAs review, ABB-CE did make changes to the System 80+ design based on the results of the PRA. These changes were related to severe accident prevention and mitigation, but were not considered in the SAMDA evaluation because they were already part of the design. See FSER Section 19.1.6, "PRA as a Design Tool."

The certification rule by itself would not authorize the siting, construction, or operation of a System 80+ design nuclear power plant. The issuance of a construction permit, early site permit, combined license, or operating license for the System 80+ design will require a prospective applicant to address the environmental impacts of construction and operation at a specific site. At that time, the NRC will evaluate the environmental impacts and issue an environmental impact statement (EIS) in accordance with NEPA. The SAMDAs analysis for the System 80+, however, has been completed as part of this environmental assessment and will not need to be evaluated again as part of an EIS related to siting, construction, or operation.

5 AGENCIES AND PERSONS CONSULTED, AND SOURCES USED

The NRC concludes that the proposed design certification rulemaking does not result in a significant environmental impact because the action does not authorize the construction and operation of a facility at a particular site. Therefore, the NRC staff did not issue this EA for comment by Federal, State, and local agencies. The NRC's finding of no significant environmental impact, based on the EA, will be published in the Federal Register with the proposed System 80+ design certification rule. Comments received as a result of the Federal Register notice will be considered as part of the development of the final rule.

The sources for this draft EA include the "Technical Support Document For Amendments to 10 CFR Part 51 Considering Severe Accidents Under NEPA for Plants of System 80+ Design," Revision 2, dated January 5, 1995, ABB-CE's "Combustion Engineering Standard Safety Analysis Report-Design Certification," through Amendment W, and the NRC staff's "Final Safety Evaluation Report Related to the Certification of the System 80+ Design" (NUREG-1462, Volumes 1 and 2), August 1994.

6 FINDING OF NO SIGNIFICANT IMPACT

The Director, Office of Nuclear Reactor Regulation (NRR), has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in 10 CFR Part 51, Subpart A, that this proposed rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and therefore, an environmental impact statement is not required.

The basis for the determination, as documented in the environmental assessment, is that the amendment to 10 CFR Part 52 would not authorize the siting, construction, or operation of a facility using the System 80+ design; it would only codify the System 80+ design in a rule. The NRC will evaluate the environmental impacts and issue an environmental impact statement (EIS) as appropriate in accordance with NEPA as part of the application(s) for the siting, construction, or operation of a facility.

In addition, as part of the environmental assessment, the NRC reviewed, pursuant to NEPA, ABB-CE's evaluation of various design alternatives to prevent and mitigate severe accidents that was submitted in ABB-CE's TSD. The Director of NRR finds that ABB-CE's evaluation provides a sufficient basis to conclude that there is reasonable assurance that an amendment to 10 CFR Part 52 certifying the System 80+ design will not exclude a severe accident design alternative for a facility referencing the certified design that would have been cost beneficial had it been considered as part of the original design certification application. The evaluation of these issues under NEPA is considered resolved for the System 80+ design.



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

The Honorable Dan Schaefer, Chairman
Subcommittee on Energy and Power
Committee on Commerce
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendments to the Commission's regulations for commercial nuclear power plants. Specifically, this proposed rule would add a new Appendix B to 10 CFR Part 52. When it is promulgated, this rule will certify the System 80+ standard design submitted to the NRC for its review by Asea Brown Boveri-Combustion Engineering.

These proposed amendments are necessary to fulfill the objectives of Part 52, which were to provide early resolution of licensing issues and foster standardization while allowing sufficient flexibility to incorporate advancements in technology and equipment. Those wishing to obtain a license to build or operate a System 80+ will be able to do so by referencing the standard design certified in Appendix B to Part 52.

Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Representative Frank Pallone



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

The Honorable Lauch Faircloth, Chairman
Subcommittee on Clean Air, Wetlands, Private
Property and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendments to the Commission's regulations for commercial nuclear power plants. Specifically, this proposed rule would add a new Appendix B to 10 CFR Part 52. When it is promulgated, this rule will certify the System 80+ standard design submitted to the NRC for its review by Asea Brown Boveri-Combustion Engineering.

These proposed amendments are necessary to fulfill the objectives of Part 52, which were to provide early resolution of licensing issues and foster standardization while allowing sufficient flexibility to incorporate advancements in technology and equipment. Those wishing to obtain a license to build or operate a System 80+ will be able to do so by referencing the standard design certified in Appendix B to Part 52.

Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Senator Bob Graham

PUBLIC ANNOUNCEMENTS

NRC PROPOSES TO CERTIFY ABB-CE'S
SYSTEM 80+ REACTOR DESIGN

The Nuclear Regulatory Commission is considering amending its regulations to certify the System 80+ nuclear reactor design developed by Asea Brown Boveri-Combustion Engineering (ABB-CE). Interested persons are invited to submit comments or to request an informal hearing before an NRC Atomic Safety and Licensing Board.

No application for a construction permit or combined license using the System 80+ standard design has been filed with the NRC, and issuance of this regulation would not authorize construction of any specific new nuclear power plant.

However, if the Commission decides to issue the rule in final form and certify the System 80+ design, a utility that wishes to build and operate a new nuclear power plant could choose to use the System 80+ design and reference it in an application for a construction permit or combined license. Safety issues within the scope of the certified design would then not be subject to litigation in a formal public hearing, although site-specific environmental impacts associated with building and operating the plant at a particular location would be litigable.

The NRC approved the design of the System 80+ in July. This design approval was necessary before the standard design could be certified in the regulations. If the Commission decides to issue

a final rule certifying the System 80+ design, it will be valid for 15 years.

The ABB-CE application for certification of the System 80+ design was reviewed for compliance with applicable portions of the Commission's current regulations, except the System 80+ would be exempt from seven regulations (primarily requirements established after the Three Mile Island accident that are not needed for this design).

The proposed rule also contains additional requirements for the System 80+ design (over and above requirements for the current generation of reactors). They include requirements for design features that would enable the System 80+ to mitigate the effects of severe accidents if they occur.

Future applicants for a construction permit or combined license could make plant-specific changes to portions of the standard System 80+ design by following the procedures set out in the proposed rule. The applicant or licensee would be required to maintain records of all such changes until the license is terminated.

Further details of the proposed rule are contained in a Federal Register notice published on _____. Interested persons are invited to submit written comments on the proposed regulation to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. The comments should be received by

_____ (120 days following publication of the Federal Register notice).

Interested persons may also request an informal hearing before an NRC Atomic Safety and Licensing Board on matters related to the design certification rulemaking. The request should be submitted, within 120 days of the Federal Register notice, to the Secretary of the Commission at the above address.

The NRC staff plans to conduct a public meeting on this proposed rule approximately 60 days following publication of the Federal Register notice. The specific date, time and location of the meeting will be announced in the Federal Register.

Copies of System 80+ design information submitted by ABB-CE are available for review and copying at the NRC Public Document Room, 2120 L Street, NW, Washington, DC.

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