

**Advanced Boiling Water Reactor Design Certification Renewal Applications:  
Draft NRC Staff Views on Application Content and Draft Staff Review Guidelines**

Revision 3, 12-01-10

**Background**

Applicants for renewal of a design certification rule (DCR) must submit an application in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (CFR), Section 52.57. To date, the U.S. Nuclear Regulatory Commission's (NRC's) staff (staff) has not developed generic guidance on the format and content of DCR renewal applications. This document represents the current views and draft guidelines for staff that will be performing reviews of the format and content of the Advanced Boiling Water Reactor (ABWR) DCR (10 CFR Part 52, Appendix A) renewal applications submitted by GE-Hitachi (GEH) and Toshiba.

Following the staff's initial use of these draft guidelines for the ABWR DCR renewal applications, the staff plans to develop generic guidance for DC renewal applications and staff review guidance. The staff will develop the generic guidance based upon lessons learned from the ABWR DCR renewal reviews, and will solicit external stakeholder feedback in developing and finalizing the guidance.

In accordance with 10 CFR 52.59(b), the Commission may impose other requirements on a DC renewal if it determines that: (1) they are necessary for adequate protection to public health and safety or common defense and security, (2) they are necessary for compliance with the Commission's regulations and orders applicable and in effect at the time the design certification was issued, or (3) there is a substantial increase in overall protection of the public health and safety or the common defense and security to be derived from the new requirements, and the direct and indirect costs of implementing those requirements are justified in view of this increased protection. In addition, while § 52.63(a) imposes more restrictive limits on the type of changes that may be made while a DCR is in effect, 10 CFR 52.59(c) allows the ABWR DC Renewal applicant greater flexibility in seeking changes to the ABWR DC. ABWR DC Renewal applications that include amendments to the certified ABWR design are not required to address the criteria in 10 CFR 52.63 (e.g., the ABWR DC Renewal applicant need not identify specific criteria in § 52.63(a)(1) as the basis for proposing an amendment to the certified design). However, in accordance with § 52.59(c), if the amendment request entails such an extensive change to the certified design that an essentially new standard design is being proposed, an application for a new certified design must be filed in accordance with Subpart B of 10 CFR Part 52.

The staff believes that the DCR concept, as implemented in Subpart B of 10 CFR Part 52, embodies the idea that, within each period that a DCR may be referenced (up to 15 years under 10 CFR 52.55(a)), the DCR and any referencing applications and licenses share a co-extensive regulatory life until the last referencing license is terminated or referencing application is denied. For example, § 52.55(b) provides that a referenced DCR remains effective in any combined license (COL) or operating license application proceeding so long as the referencing application is submitted before the date of expiration of the DCR or the NRC's determination on a timely-filed DCR renewal application.

The statements of consideration for the 2007 Part 52 rulemaking (72 FR 49352, dated August 28, 2007), also discussed the continuing regulatory life of a DCR after its expiration, with respect to compliance with the reporting requirements in 10 CFR Part 21.

Applying the above principles at renewal, it is clear to the staff that the previous (pre-renewal application) version of the ABWR DCR and the ABWR DCD must be retained as a legally-binding rule if the ABWR DCR has been referenced in an application, or in a COL or manufacturing license. Accordingly, if at the time of submission of the ABWR DC Renewal application, the existing ABWR DCR is referenced in an ongoing application or license, then the previous ABWR DCD must continue to be approved for incorporation by reference in the renewed ABWR DCR.

The staff proposes to use the term, "class," to denote each version of the DCR and DCD during each period a DCR may be referenced, as well as the set of applications and licensees referencing that class of DCR and DCD. Applying this terminology to the ABWR DC Renewal, the staff would use "ABWR DCD, Class 2," to refer to the first renewal of the DCR; and "ABWR DCD, Class 3," for the second renewal of the DCR, and so forth (the initial issuance of the ABWR DCR and DCD being "ABWR DCD Class 1"). The updated DCD in the renewal application should be appropriately designated as the initial submittal for that "class" (i.e., [NAME OF CERTIFIED DESIGN] certified design, Class 2, Rev. 0) and annotated to distinguish between new information that has been included as part of the update and the information that was provided in the existing DCD.

### **Acceptance Review**

Generally, the DRNL Staff will perform the acceptance review on the ABWR DC Renewal application within 30 days of receipt. This will consist of a completeness review if the staff has already reviewed the information at one point in the past, e.g., review of the original ABWR DC. However, portions of the application that represent new, unreviewed design features, e.g. aircraft impact, may well trigger the need for a technical sufficiency review of that new information.

It is the staff's current view that, for a completeness review, the ABWR DCR renewal applications should include:

- i. a complete design control document (DCD) that reflects applicant-proposed updates under 10 CFR 52.57(a) and amendments under 10 CFR 52.59(c), and that is submitted in accordance with the current requirements for electronic document submittal in 10 CFR 52.3 and the filing requirements in 10 CFR 2.811 through 10 CFR 2.819.
- ii. information necessary to demonstrate the technical qualification of the applicant, if different from the original applicant.
- iii. information to demonstrate compliance with 10 CFR 50.150, Aircraft Impact Assessment Rule, if the design has not already been amended to satisfy 10 CFR 50.150.
- iv. an Environmental Report (ER) in accordance with 10 CFR 51.55(b).

More detailed discussions of the staff's views with respect to the content of each of these documents are provided in the technical review section of these guidelines.

### **Technical Review**

The technical review should consist of reviewing an updated ABWR DCD), additional applicant information, and an ER.

#### *Updated ABWR Design Control Document*

The ABWR DC Renewal application should contain a separate ABWR DCD representing the DCD for the applicable period of renewal of the ABWR design. The content of the ABWR renewal DCD should comply with the guidelines below under *Content of Renewal DCD*.

#### Content of Renewal DCD

The entire ABWR DCD (i.e., the version of the ABWR DCD last approved for incorporation by reference) must be updated under 10 CFR 52.57(a) to include corrections of errors, typos, and defects (as defined in 10 CFR Part 21), which are known by the ABWR DC Renewal applicant. The ABWR DCD must also reflect any design changes (defined below.) In addition, the ABWR DCD must be updated to include the information necessary to demonstrate the technical qualification of the applicant, if different from the original applicant. Finally, the ABWR DCD must be submitted to the NRC in accordance with the current requirements for electronic document submittal in 10 CFR 52.3 and the filing requirements in 10 CFR 2.811 through 10 CFR 2.819.

For clarity, the staff considers design changes to be in three categories and accordingly refers to these three categories distinctly. The staff considers the following three categories of changes included in the ABWR DC Renewal application: *modifications, renewal backfits, and amendments*.

*Modifications* to the certified design are considered to be those changes that are necessitated by the requirement to update the application in accordance with § 52.57(a) [e.g., to correct known errors and defects] and § 52.59(a). Modifications must comply with the Atomic Energy Act (AEA) and the Commissions regulations applicable and in effect at the time the certification was originally issued with the exception of those changes proposed by the DC Renewal applicant to comply with 10 CFR 50.150, as required by § 52.59(a).

*Renewal backfits* to the certified design are considered to be those changes that are necessary to comply with additional requirements imposed by the NRC through application of the criteria in § 52.59(b). The NRC staff is responsible for justifying renewal backfits under this provision. However, to gain insight as to whether a change needs to be made under this criterion,

additional information is being requested from the applicant pursuant to the updating requirement in 10 CFR 52.57(a) (see Additional Application Information below.)

*Amendments* to the certified design are considered to be those changes proposed by the DC Renewal applicant in accordance with § 52.59(c). Amendments must comply with the AEA and the Commissions regulations applicable and in effect at the time of renewal. ABWR DC Renewal applications that include amendments to the certified design are not required to address the criteria in 10 CFR 52.63, but in accordance with § 52.59(c), if the amendment request entails such an extensive change to the certified design that an essentially new standard design is being proposed, a new DC application must be submitted.

In reviewing the DC renewal application, the NRC staff intends to ensure that the DC renewal applicant for the ABWR certified design has submitted a complete ABWR DCD in electronic format suitable for transmission to the Office of Federal Register for incorporation by reference (i.e., CDs or DVDs), and that it has been revised as follows:

- i. same organization and numbering as the original ABWR DC except for additions and deletions, with any changes to the organization and numbering clearly identified and justified;
- ii. changes to the ABWR certified design that may include additions, deletions, or alterations to structures, systems, and components of the ABWR certified design should be clearly identified and uniquely distinguished as modifications, renewal backfits, or amendments to the certified design. The application should include suitable justifications for the changes along with a discussion of how the revised design complies with the applicable regulations;
- iii. for amendments to the certified design included in the ABWR DC renewal application, an evaluation to show that changes to the certified design are in compliance with regulations in effect at the time of renewal;
- iv. at the level of detail required by 10 CFR 52.47, analyses, evaluations, and reports that have either been updated, revised, or newly included to demonstrate the adequacy of the changes to the ABWR design;
- v. a description of the revised design-specific probabilistic risk assessment and its results to reflect changes to certified ABWR design features;
- vi. a summary of changes to the certified ABWR design has been included in the ABWR DC renewal application along with a roadmap or tabulation identifying the locations of descriptions, discussions and justifications for the specific design changes included throughout the ABWR DCD;
- vii. the information required by 10 CFR 50.150(b) for the ABWR DCD that does not already meet 10 CFR 50.150.

#### Updates of Documents Referenced in the Updated ABWR DCD

The staff intends to review the DC renewal application for the ABWR certified design to ensure that it includes updates to all topical reports, sensitive unclassified non-safeguards information

(including proprietary information), and safeguards information that were incorporated by reference into the original DC. The updates must include corrections of errors, typos, and defects (as defined in 10 CFR Part 21) which are known by the ABWR DC Renewal applicant. To the extent that information incorporated by reference into the ABWR DCD contains design information that would ordinarily be placed in the DCD but for its protected status, the staff should ensure that this information has been updated to reflect any design amendments sought by applicants under 10 CFR 52.59(c), as well as any modifications to the design that the ABWR DC Renewal applicant proposes to include to meet the renewal criteria in 10 CFR 52.59(a). Additions, deletions, and any necessary changes to these referenced materials should be clearly identified.

#### *Additional Application Information*

Pursuant to the updating requirement in 10 CFR 52.57(a), the staff intends to also review the DC renewal application to ensure that it includes additional information that addresses the items below and that this additional information is submitted in addition to the updated ABWR DCD:

- i. any new and relevant information regarding the ABWR DC Renewal applicant, including, but not limited to the information required by 10 CFR 52.46;
- ii. whether there is material new information with respect to technical resolutions to high and medium priority unresolved safety issues (USIs) and generic safety issues (GSIs) addressed in the original ABWR DCR, and if the ABWR DC Renewal applicant is proposing any change to the design as a result of the material new information;
- iii. whether there are new USIs and GSIs created/identified since the ABWR design was certified and whether the applicant is proposing any change to the design as a result of any new USI and GSI, and if no changes are proposed, the bases for the renewal applicant's determination that no change to the design is necessary;
- iv. whether there are new generic letters and bulletins issued after the ABWR design was certified and whether the applicant is proposing any changes to the design as a result of any new generic letter and bulletin, and if no changes are proposed, the bases for the applicant's determination that no change to the design is necessary;
- v. whether there is any relevant domestic and international operating experience that has been documented since the ABWR design was certified and whether the applicant is proposing any changes to the design as a result of this new information, and if no changes are proposed, the bases for the renewal applicant's determination that no change to the design is necessary.

The staff will review the additional information discussed above that is provided by the applicant to determine whether any other NRC requirements should be imposed on the certified design based on application of the renewal criteria in § 52.59(b). These criteria include: adequate protection, compliance with the regulations in effect at the time of the original certification, and cost-justified significant increase in overall protection of the public health and safety or common defense and security. The NRC staff will go through a process for determining whether imposing additional requirements on the ABWR certified design is justified, and will prepare

appropriate documentation to support such a determination. For approved backfits, the NRC staff will advise the applicant of the options for resolving the issue, which include the following: (i) the applicant may submit the necessary changes to comply with the additional requirements; (ii) the NRC will recommend denial of the application unless the additional requirements are met; or (iii) the applicant may withdraw the application.

#### *Environmental Report*

The staff intends to review the DC Renewal application to ensure that it includes a separate ER in accordance with 10 CFR 51.55(b). The ER must address whether any proposed design change included in the ABWR DC renewal application either renders a severe accident mitigation design alternative previously rejected in the environmental assessment to become cost beneficial, or results in the identification of new severe accident mitigation design alternatives that may be reasonably incorporated into the ABWR design.

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