



General Electric Company
175 Cortland Avenue, San Jose, CA 95129

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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Robert C. Pierson, Director
Standardization and Non-Power Reactor Project Directorate

Subject: **GE Overall Design Process to Complete and Control the U.S.
ABWR Final Design**

Reference: Robert C. Pierson Letter to Mr. Patrick W. Marriott, "Summary of
General Electric Company (GE) Advanced Reactor (ABWR)
Design Process Assessment", May 15, 1992

Enclosed are thirty-four (34) copies of the subject design process submitted in accordance with the Reference letter. Consistent with the request, the submittal includes the following information:

1. GE's design process for the U.S. ABWR standard plant,
2. Pre-certification and post-certification design control procedures,
3. Role of the COL applicant,
4. Control of design documentation in support of the certified design, and
5. GE's agreement with the Japanese for design information exchange and availability and its duration.

Sincerely,

S. J. Stark, Acting Manager
Regulatory and Analysis Services
M/C 444, (408) 925-6948

cc: N. D. Fletcher
F. A. Ross
C. Poslusny, Jr.
R. C. Berglund
J. F. Quirk

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GE'S OVERALL DESIGN PROCESS TO COMPLETE
AND CONTROL THE U.S. ABWR FINAL DESIGN

GE's Design Process for the U.S. ABWR Standard Plant

GE and its associates control the review and approval of ABWR Common Engineering design documents with a procedure using the Engineering Review Memorandum (ERM). The lead design organization prepares the document and circulates it internally for engineering review, approval, and design verification. Evidence of verification is entered into the design records of the responsible design organization. Each such document is distributed by ERM to the design organizations of the other parties for their review and approval of technical content and design interfaces. All comments resulting from this process are resolved to the satisfaction of all parties. After resolution of all comments, the design verification is reviewed and, when necessary, updated to assure that the changes did not invalidate the original verification. After final agreement is reached, the document is finalized by the lead design organization, circulated to the other parties for their approval signatures, and then circulated.

Changes to Common Engineering documents are also approved by GE and its associates. The changed document revision status is advanced or a new document initiated. The new or changed document is circulated for review, verification, and approval to all parties that performed the original review, verification, and approval.

Differences between the international ABWR design and the U.S. ABWR design are identified in a controlled list for future design action and application.

For engineering documents prepared uniquely by GE for the U.S. ABWR Certification, the design engineers prepare the document and circulate it internally for engineering review, approval, and design verification. The engineering calculations and supporting documents as well as evidence of verification are entered into the GE design record file (DRF) and the document is issued.

For changes to engineering documents prepared by GE for the U.S. ABWR Certification, the changed document is circulated to all parties that performed the original review, verification, and approval. Appropriate records are entered into the DRF, the changed document revision status is advanced, and the document is issued.

Pre-certification and Post-certification Design Control Procedures

The same design control procedures described above apply to both Common Engineering and GE documents issued before as well as after certification of the U.S. ABWR. However, after certification, the issued documents constituting the certified design become design requirements for subsequent design activity on the U.S. ABWR. These requirements cannot be changed without the approval of the COL applicant and/or the USNRC, as appropriate. The verification of the subsequent design activity will include verification that the design requirements are met.

The Role of the COL Applicant

The COL applicant's role in the process would begin with its application referencing the ABWR standard design certification. Matters covered by Tier 1 could only be changed by the COL applicant through an NRC-approved exemption or amendment preceded by a hearing opportunity (per Sections 52.63[1] and 52.97[b]).

As to Tier 2, a change provision could be incorporated in the design certification rule as provided by 52.63(b) (2), which parallels that prescribed in 50.59 for Part 50 operating licenses. In effect, the COL holder could make changes from the design as described in Tier 2 if such changes did not alter the Tier 1 design description or ITAAC and did not involve an unreviewed safety question. Tier 2 changes that would not qualify under this provision would be dealt with as amendments to the COL.

Control of Design Documentation in Support of the Certified Design

GE will apply its QA process throughout the development of first-of-a-kind engineering (FOAKE) phase (as well as subsequent phases of design definition), and will insure that all commitments made in the Design Certification (i.e., Tier 1 and Tier 2) are satisfactorily being implemented. The extent to which the staff should audit or inspect FOAKE is being discussed. Certainly, the timing and participation by suppliers in an industry FOAKE Program is actively being explored.

GE's Agreement with the Japanese for Design Information Exchange and Availability and its Duration

In general, GE's agreement with the Japanese for design information exchange and availability falls under the Technical Cooperation Agreement (TCA) which has recently been renewed through October 29, 2001. Under the TCA, GE has been able to obtain detailed design information with a lead time of about two months.