



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 24, 1996

Mr. Charles B. Brinkman, Director  
Nuclear Licensing  
Combustion Engineering, Inc.  
1000 Prospect Hill Road  
Windsor, Connecticut 06095-0500

SUBJECT: CLARIFICATION OF SYSTEM 80+ PROBABILISTIC RISK ASSESSMENT (PRA)  
RESULTS

Dear Mr. Brinkman:

In a letter to the U.S. Nuclear Regulatory Commission (NRC) dated October 6, 1995, ABB-CE requested that the NRC staff provide an additional explanation of the derivation of bottom line PRA results. ABB-CE is concerned that comparisons of bottom line PRA results, such as core damage frequency (CDF) estimates, between different designs are done without taking into account differences in assumptions that contribute to these bottom line PRA results. In particular, the ABB-CE letter mentions that if the System 80+ PRA had assumed that the reactor vessel and common cause failures (except for diesels and batteries) are not credible, then the CDF (from internal events at power operation) would decrease by approximately an order of magnitude (from 1.7E-06 events/year to 1.4E-07 events/year). This is supported by a sensitivity analysis, presented in Table 19.10-1 of the CE Standard Safety Analysis Report-Design Certification (CESSAR-DC), which has been reviewed by the staff.

The staff agrees with ABB-CE's statement that bottom line PRA results (e.g., CDF estimates) of different designs should not be compared directly without a clear understanding of the assumptions made in the PRA. Differences in assumptions become especially significant when the bottom line PRA results are in a range which indicates low CDF and/or risk. In reviewing a design certification PRA, the staff does not concentrate on bottom line numbers but rather on the relative insights that a PRA provides about the design.

Also, the staff's review found acceptable the sensitivity analysis, presented in Table 19.10-1 of the CESSAR-DC, which shows that if the reactor vessel and common cause failures (except for diesels and batteries) were not assumed to be credible, then the CDF (from internal events at power operation) would decrease by approximately an order of magnitude (from 1.7E-06 to 1.4E-07 events/year). However, the staff cannot completely rule out vessel or common cause failures, even though the probability of such events is very small. In addition, keeping these failures in the PRA adds robustness and a higher degree of quality to the results.

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Mr. Charles B. Brinkman

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January 24, 1996

Should you have further questions on this subject, please feel free to contact Mr. Stewart Magruder of my staff at (301) 415-3139.

Sincerely,

original signed by:

Theodore R. Quay, Director  
Standardization Project Directorate  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

Docket No. 52-002

cc: See next page

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ABB-Combustion Engineering, Inc.

Docket No. 52-002

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