



March 4, 1994
LD-94-018

Docket No. 52-002

Mr. Wm. T. Russell, Director
Division of Nuclear Reactor Regulation
Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: System 80+ - Technical Justification for ALWR Emergency
Planning

Reference: EPRI Letter, R. McDonald to Dr. T. Murley, dated
December 31, 1993

Dear Mr. Russell:

This letter supplements the reference letter, submitted by the Electric Power Research Institute (EPRI), which forwarded their report on the technical aspects of emergency planning for ALWRs. ABB Combustion Engineering (ABB-CE) continues to support the development of emergency planning criteria based on our belief that ALWRs which are designed according to the ALWR Utility Requirements Document are substantially safer than current designs.

We have evaluated and demonstrated that the System 80+ Standard Plant Design meets all criteria for emergency planning proposed in the report submitted by EPRI. This evaluation consisted of both deterministic and probabilistic evaluation of containment integrity and calculations of the dose at the site boundary for severe accidents. System 80+ containment performance, which has been documented in Section 19.12.2.3 of CESSAR-DC and reviewed by NRC staff, demonstrated a reliability of approximately 97% for a spectrum of severe accidents.

As described in Section 15.6.5 of CESSAR-DC, the dose at the site boundary (one-half mile from the reactor) is only 0.3 rem for a severe accident LOCA, well below the lower Protective Action Guideline (for emergency planning) of 1 rem.

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Another measure of the acceptability of a plant's design for ALWR emergency planning is its overall improvement in safety relative to the current generation of operating reactors. Through a series of deterministic severe accident evaluations by ABB-CE and the NRC, it has been demonstrated that System 80+ advanced design features resolve NRC issues on prevention and mitigation of severe accidents involving phenomena such as hydrogen burns, steam explosions, and core-concrete interactions. In these evaluations emphasis was placed on containment integrity.

In addition, the System 80+ PRA has demonstrated two orders magnitude improvement in safety relative to current plants. The total core damage frequency, including shutdown risk, is $2.8E-6$ events/year, which is more than a factor of three below the ALWR goal of $1.0E-5$ events/year. The large offsite release frequency is $5.3E-8$ events/year, as compared to the goal of $1.0E-6$ events/year.

For the System 80+ design, meeting the PAG limit is strongly dependent on not only containment performance, but also cleanup of the "source term" inside the containment due to containment spray. While phenomena such as plate-out and secondary building holdup occur naturally in the System 80+ design (and all other designs), the System 80+ evaluations did not credit those phenomena. The most important means of controlling atmospheric radioactivity in the System 80+ design is the safety-grade containment spray system, which is backed up by the shutdown cooling system pumps and an emergency spray backup feature (which can be used to pump water into the containment from outside).

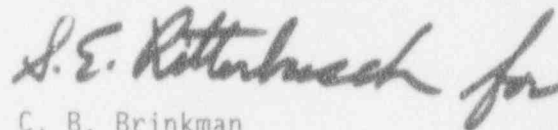
In summary, ABB-CE strongly supports the industry initiatives for ALWR emergency planning. We wish to emphasize, however, that we do not agree with the emphasis on the passive plant designs in EPRI's report. The technical criteria for ALWR emergency planning, and corresponding policy approaches being coordinated through NUMARC, are equally applicable to evolutionary ALWR designs, such as System 80+. The NRC staff has not reviewed the System 80+ design in the context of the ALWR emergency planning criteria in EPRI's report. However, the analyses to demonstrate compliance of the System 80+ design with the containment performance criteria for ALWR emergency planning have been reviewed by NRC staff during the safety review for the System 80+ Final Design Approval.

Since our evaluations have shown that the System 80+ Standard Plant Design can easily meet the ALWR emergency planning criteria, ABB-CE requests that the staff include System 80+ in any evaluations or meetings related to ALWR emergency planning.

If you have any questions or wish to discuss the above, please call me or Mr. Ritterbusch at (203) 285-5206.

Very truly yours,

COMBUSTION ENGINEERING, INC.



C. B. Brinkman
Director
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CBB/ser

cc: J. Trotter (EPRI)
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