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OFFICE OF SECRETARY  
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USNRC

Mr. John C. Hoyle, Secretary  
Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

DOCKET NUMBER **PR 52**  
PROPOSED RULE

(60FR17902)

Response to OCRE's 8/12/95  
supplemental comments

Attention: Docketing and Services Branch

Subject: Notice of Proposed Rulemaking for Standard Design Certification of the U.S. Advanced Boiling Water Reactor Design; 60 Fed. Reg. 17902 (April 7, 1995); Docket No. 52-001

Dear Mr. Hoyle:

On August 12, 1995, Ohio Citizens for Responsible Energy, Inc. (OCRE) submitted several comments on certain design features of General Electric Company's Advanced Boiling Water Reactor (ABWR), requesting that the Commission incorporate OCRE's suggested changes. Insofar as one of OCRE's suggested changes might potentially impact Combustion Engineering, Inc.'s (ABB-CE's) design features for ABB-CE's System 80+™ Standard Plant Design, ABB-CE believes it is appropriate to respond to OCRE's specific recommendation, which was made on the ABWR docket.

For the reasons given in the attached response to OCRE's comment, ABB-CE strongly disagrees with any suggestion that the NRC extend a favorable consideration of this comment to the System 80+ Standard Plant design.

If you have any questions on this submittal or if you wish to discuss it, please contact me at (301) 881-7040, or ABB-CE counsel, Joe Egan, at (202) 663-9200.

Respectfully submitted,

COMBUSTION ENGINEERING, INC.

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Attachment: As Stated

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**OCRE comment #4:**

ACRS members William Kerr and Charles J. Wylie made the following additional remarks in the ACRS letter of July 18, 1989 on proposed staff actions regarding the fire risk scoping study (NUREG/CR-5088):

We recommend that the staff require the use of armored electrical cable in advanced light-water reactors. There are more than 20 years of U.S. electric utility experience which demonstrates its advantages in both nuclear and fossil electric generating plants. There is extensive experience with armored cable in naval and maritime vessels and in chemical plants. The British are requiring its use in the Sizewell B plant.

The armor makes its (sic) significantly more difficult for external heat sources to kindle and to propagate fires within the cables. It is practically impossible to kindle and propagate a fire from internal short circuits and overloads. Armor provides a high degree of mechanical protection for the cable. It also provides shielding against external electromagnetic fields. This feature becomes more important as the application of solid-state components in power plants increases. It is particularly important in providing protection against electromagnetic pulses generated by lightning.

OCRE believes this is sound advice and recommends that the NRC require the use of armored cable in the ABWR and in all future nuclear power plants (emphasis added).

**ABB-CE Response for System 80+:**

ABB-CE strongly disagrees with any suggestion that NRC extend a favorable consideration of this comment to the System 80+™ Standard Plant design. The System 80+ Standard Design includes a requirement that cables inside Containment and the Shield Building Annulus used for safe shutdown functions have three-hour fire rated cable protection (i.e., mineral insulated cable or equivalent). This commitment is made in Sections 9.5.1.1.2, 9.5.1.2, and 9.5.1.3.8 of the System 80+ Design Control Document (DCD). Mineral insulated cable performs the same function as armored cable and is considered superior to armored cable. This was discussed with the ACRS Subcommittee on ABB-CE Standard Plant Designs during their review of System 80+ fire protection capability (starting on page 394 of the Official Transcript for the April 6, 1994 meeting). The ACRS Subcommittee, including Mr. Wylie (who contributed to the ACRS comment quoted by OCRE), and the ACRS full Committee, as well as the NRC staff, agreed with the selection of mineral insulated cable for the System 80+ Standard Plant design. Mineral insulated cable is sheathed with a mineral cupro-nickel metal that has been successfully tested for fire resistance by Underwriters Laboratories, Inc. It is superior to armored cable since the insulation is continuous rather than interlocked at insulation joints. Additional cable protection features are described in Section 8.3.1.6 of the System 80+ DCD.

Outside the containment and annulus, mineral insulated or armored cable is not required for fire protection since redundant divisions of safety related equipment are completely separated by

three-hour fire rated barriers. The exceptions are the control room and the remote shutdown room which are both physically separated and electrically isolated from each other. This exceeds the requirements imposed on currently operating plants which stipulate that cable for redundant divisions shall be spatially separated and that fire suppression systems be provided.

Signal cables are routed in cable trays and conduits separate from those for power cables to further reduce the potential for electromagnetic interference. Where it is desired to provide additional assurance of electromagnetic interference protection, shielded cables (with, e.g., woven metallic or metal coated mylar wrappings) are used. Cable qualified to IEEE Standard 383 is used - such cable resists propagation of a fire. Also, components requiring electromagnetic interference protection are placed in shielded cabinets.

Furthermore, the control and signal cables on the System 80+ Standard Plant Design are primarily fiber optic. This reduces the number of cables susceptible to fire and electromagnetic interference by approximately a factor of ten. Voltage on cable inside the control room is limited to 120 volts, significantly reducing the likelihood of a fire being started or for electromagnetic interference (see the ACRS transcript referenced above, starting on page 660, for additional discussion of the control room cabling system).

In summary, the System 80+ design already satisfactorily addresses the basis of the concern raised by OCRE.