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DCP/NRC0835
Docket No.: STN-52-003

May 9, 1997

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

ATTENTION: T. R. QUAY

SUBJECT: AP600 DESIGN CERTIFICATION; FIRE PROTECTION
REGULATION; WESTINGHOUSE DEFINITION OF
PROTECTION OF SAFE SHUTDOWN CAPABILITY: KEY ISSUE 12

Dear Mr. Quay:

This letter presents the Westinghouse interpretation of the fire protection regulations on safe shutdown capability and how they apply to AP600, a new plant. Based upon discussions with NRC and questions received, such as Open Item 308, we believe that the Westinghouse interpretation may be different from that of the NRC.

Fire protection regulation as it applies to nuclear power plants derive from Criterion 3 of 10CFR50, Appendix A. Criterion 3 requires, in part, that structures, systems and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Implementation of Criterion 3 is further expanded in 10CFR50.48. Among other requirements, 10CFR50.48 imposes 10CFR50 Appendix R on plants licensed to operate prior to January 1, 1979. In particular, 10CFR50.48 imposes the requirements of III.G, III.J and III.O of Appendix R. For plants licensed to operate after January 1, 1979, the detailed requirements "needed to satisfy Criterion 3 of Appendix A to this part [shall be] in accordance with the provisions of their licenses."

AP600 is a plant which will be licensed to operate after January 1, 1979 and, therefore, Appendix R strictly does not apply. However, because Appendix R, along with NRC interpretations and positions in Generic Letters 83-33 and 86-10, is a standard set of requirements, it was used for guidance in the design of AP600. Westinghouse believes the specific regulatory bases for AP600 fire protection is the Standard Review Plan (NUREG-0800), Section 9.5.1 and its Branch Technical Position (BTP) CMEB 9.5-1, along with the guidance of SECY-90-016 and SECY-93-087, which set forth fire protection criteria, along with other issues, specifically for Evolutionary Light Water Reactors Certification. In most areas BTP CMEB 9.5-1 duplicates Appendix R of 10CFR50.

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BTP CMEB 9.5-1 states that it includes the "criteria listed in a number of documents, including Appendix R to 10CFR Part 50 and 10CFR Part 50, & 50.48. The purpose of the fire protection program is to ensure the capability to shutdown the reactor and maintain it in a safe shutdown condition and to minimize radioactive releases to the environment in the event of a fire."

Appendix R and BTP CMEB 9.5-1 have consistent definitions of "important to safety" and "safety related" systems and components as those "required to shut down the reactor, mitigate the consequences of postulated accidents, or maintain the reactor in a safe shutdown condition". Westinghouse believes this definition includes "safe shutdown systems", a term used throughout Appendix R and BTP CMEB 9.5-1. Both Appendix R and BTP CMEB 9.5-1 require a fire hazards analysis to "...determine the consequences of fire in any location in the plant on the ability to safely shut down the reactor or in the ability to minimize and control the release of radioactivity to the environment...". They both then require alternative or dedicated shutdown capability where "the protection of systems whose functions are required for safe shutdown is not provided by established fire suppression methods or by Position C.5.b (III.G of Appendix R)."

Position C.5.b of BTP CMEB 9.5-1 (III.G of Appendix R) prescribes the requirements for features to be provided for "safe shutdown capability." For AP600 "safe shutdown" is deemed equivalent to cold shutdown by SECY-94-084. Using the separation criteria of Position C.5.b(2) (III.G.2 of Appendix R), AP600 meets Position C.5.b(1) (III.G.1 of Appendix R). The fire protection features of AP600, as described in the SSAR, limit fire damage so that one train of systems necessary to achieve and maintain safe shutdown conditions is free from fire damage. This is shown even when it is assumed that all equipment in the fire area or zone is rendered inoperable and re-entry into the fire area or zone for repairs or operator action is not possible. This is in full compliance with the SECY guidance for Evolutionary Light Water Reactors.

Westinghouse understands that during the implementation Appendix R in licensed nuclear power plants, NRC issued a number of positions regarding pre-existing capabilities. These positions are included in Generic Letters 83-33 and 86-10 as well as others. These positions are in the form of answering questions pertaining to existing systems so that credit for separation, suppression or other requirements could be granted without major rework to the plant. This led to an interpretation of allowing normal shutdown systems to be used as safe shutdown systems for the purpose of analysis to Section III.G.2 of Appendix R. Note that there is no mention of "normal" shutdown systems in either Appendix R or BTP CMEB 9.5-1. AP600 needs no interpretation. It has been designed to meet the explicit requirements of BTP CMEB 9.5-1, SECY-90-16 and SECY-93-087 as described in its SSAR.

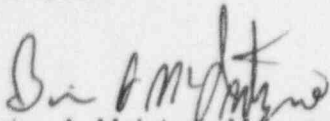
As indicated by Position C.5.b(3) (III.G.3 of Appendix R), alternative or dedicated shutdown capability or the use of "normal" systems to provide safe shutdown capability is not required since the guidelines of Positions C.5.b(1) and C.5.b(2) are met.

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Please contact me on 412-374-4334 or J. W. Winters 412-374-5290 if you have questions on this letter.



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cc: D. Jackson, NRC
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