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Your ref. Docket 52-006
Our ref: DCP/NRC1534

December 3, 2002

SUBJECT: AP1000 Request for Exemptions

On March 28, 2002, Westinghouse submitted an application for Final Design Approval and Design Certification for the AP1000 standard nuclear plant facility, under the provisions of 10 CFR Part 52. The AP1000 design is an advanced nuclear plant design that includes improved passive safety systems, simplified support systems, state-of the-art instrumentation and control systems, and an advanced control room design. The AP1000 design is based closely on the AP600 passive plant design that received Design Certification from the US NRC in 1999. Like the AP600, the AP1000 meets NRC regulations for a nuclear facility in accordance with the applicable requirements of the Code of Federal Regulations. However three specific regulations prescribe design features as a means of addressing a specific safety issue. The AP1000 design, like the AP600, addresses the underlying purpose of these regulations with design features not envisioned by the regulation. Therefore, we request an exemption from these specific regulations:

1. 10 CFR 50.34(f)(2)(iv) Plant safety parameter display console
2. 10 CFR 50.62(c)(1) Auxiliary (or emergency) feedwater system
3. 10 CFR Appendix A GDC 17 Physically independent circuit (second offsite power source

Exemptions from these regulations were granted for the AP600 Design Certification, and the staff reviewed the applicability of these exemptions to the AP1000 during the pre-certification review and concluded that they should also be applicable to the AP1000. Attached is the basis for our request for an exemption to these regulations.

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Please contact me at 412-374-5355 if you have any questions concerning this request.

Very truly yours,

Michael M. Corletti

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/Attachment
1) Exemption to NRC Regulations

DCP/NRC1534

December 2, 2002

Attachment 1

"EXEMPTIONS TO NRC REGULATIONS"

Attachment to DCP/NRC1534

EXEMPTIONS TO NRC REGULATIONS

1. Exemption from 10 CFR 50.34(f)(2)(iv) for safety parameter display console

"Provide a plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant, capable of displaying a full range of important plant parameters and data trends on demand, and capable of indicating when process limits are being approached or exceeded."

The purpose of the plant safety parameter display console (or safety parameter display system) is to display important plant variables in the main control room in order to assist in rapidly and reliably determining the safety status of the plant.

The requirements for the safety parameter display system are specified during the main control room design process, and are met by the main control room design, specifically as part of the alarms, displays, and controls. The safety parameter display function is integrated into the main control room design. The requirements for a safety parameter display system (NUREG-0696) are met by grouping the alarms by plant process or purpose, as directly related to the critical safety functions.

The process data presented on the graphic displays is similarly grouped, facilitating an easy transition for the operators. The safety parameter display system requirement for presentation of plant data in an analog fashion prior to reactor trip is met by the design of the graphic CRT displays.

The AP1000 main control room design, without a separate safety parameter display console, meets the exemption criteria of 10 CFR 50.12 (a)(2)(ii). The integration of the safety parameter display function into the main control room design represents an acceptable alternative that accomplishes the intent of the regulation.

2. Exemption from 10 CFR 50.62 requirement for automatic start up of auxiliary Feedwater system

10 CFR 50.62 requires the automatic initiation of the auxiliary feedwater system under conditions indicative of an ATWS. The AP1000 does not include a safety-related auxiliary feedwater system, but instead automatically initiates the passive residual heat removal system.

The criteria for exemptions in 10CFR50.12 have been reviewed for applicability to automatic initiation of the auxiliary feedwater system. This exemption request satisfies criterion (a)(2)(ii). The applicable criterion is addressed below.

(a) (2) (ii) Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule;

The AP1000 is designed to provide safety-related emergency core cooling without the use of active safety-related systems. The passive residual heat removal system transfers heat from the reactor coolant by natural convection using the passive residual heat removal system heat exchanger in the in-containment refueling water storage tank (IRWST) and the containment shell. The core in the AP600 can be cooled using safety-related systems and components without initiation of the nonsafety-related auxiliary feedwater system.

3. Exemption from General Design Criteria 17 requirement for physically independent circuit (second off-site electrical power source) (DCD Section 3.1)

This requirement is found in 10 CFR 50 Appendix A, General Design Criterion 17 - Electrical Power Systems

"An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming that the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system shall have sufficient independence, redundancy, and testability to perform their safety functions, assuming a single failure.

Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights-of-way) designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time, following a loss of all onsite alternating current power supplies and other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss of coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies."

The AP1000 plant design supports an exemption to the requirement of GDC 17 for two physically independent offsite circuits by providing safety-related passive systems for core cooling and containment integrity, and multiple nonsafety-related onsite and offsite electric power sources for other functions. See DCD Section 6.3 for additional information on the systems for core cooling.

A reliable dc power source supplied by batteries provides power for the safety-related valves and instrumentation during transient and accident conditions.

The Class 1E dc and UPS system is the only safety-related power source required to monitor and actuate the safety-related passive systems. Otherwise, the plant is designed to maintain core cooling and containment integrity, independent of nonsafety-related ac power sources indefinitely. The only electric power source necessary to accomplish these safety-related functions is the Class 1E dc and UPS power system which includes the associated safety-related 120V ac distribution switchgear.

Although the AP1000 is designed with reliable nonsafety-related offsite and onsite ac power that are normally expected to be available for important plant functions, nonsafety-related ac power is not relied upon to maintain the core cooling or containment integrity for either design.

The nonsafety-related ac power system is designed such that plant auxiliaries can be powered from the grid under all modes of operation. During loss of offsite power, the ac power is supplied by the onsite standby diesel-generators. Preassigned loads and equipment are automatically loaded on the diesel-generators in a predetermined sequence. Additional loads can be manually added as required. The onsite standby power system is not required for safe shutdown of the plant.

This evaluation of power sources required for AP1000 meets the exemption criteria of 10 CFR 50.12 (a)(1) and (a)(2)(ii).