



Nuclear Systems

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August 13, 2001
Project 711
DCP/NRC1482

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ATTENTION: Mr. Alan Rae, NRC, MS 12E1

Reference: 1. Westinghouse Letter DCP/NRC1383 "Request for Exemption,"
dated June 19, 1998

Dear Mr. Rae,

The purpose of this letter is to request the NRC to make a determination on the applicability of the exemptions granted for AP600 to the AP1000. For the AP600, the following exemptions from the following regulations were granted, as specified in 10 CFR Part 52 Appendix C (V)(B) as follows:

1. Paragraph (a)(1) of 10 CFR 50.34 – whole body dose criterion;
2. Paragraph (f)(2)(iv) of 10 CFR 50.34 – Plant Safety Parameter Display;
3. Paragraphs (f)(2)(vii), (viii), (xxvi), and (xxviii) of 10 CFR 50.34 – Accident Source Term in TID 14844;
4. Paragraph (a)(2) of 10 CFR 50.55a – ASME Boiler and Pressure Vessel Code;
5. Paragraph (c) (1) of 10 CFR 50.62 – Auxiliary (or emergency) feedwater system;
6. Appendix A to 10 CFR Part 50, GDC 17 – Offsite Power Sources; and
7. Appendix A to 10 CFR Part 50, GDC 19 – whole body dose criterion

Westinghouse requests that exemptions (2), (5) and (6) (above) be granted for AP1000, based on a similar rationale as was proposed for AP600. In reference 1, Westinghouse provided the justification for granting these exemptions. Attached is our rationale for requesting these exemptions for AP1000.

Based on changes in the regulations regarding accident source term (10 CFR 50.67 and GDC 19), we will not be requesting exemption (1), (3), or (7) for AP1000.

Regarding exemption (4), 10 CFR Part 55.a, we do not request a consideration of this exemption at this time. The NRC has recently proposed a rule change to 10 CFR 50.55.a. It is our intention that the AP1000 will comply with this regulation once it has been issued, however this issue may need to be formally revisited once the regulation is adopted formally.

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This information is submitted for consideration in the pre-certification review of the AP1000.
Please direct comments or questions regarding this information to me at (412)-374-5455.

Yours truly,



M. M. Corletti
Passive Plant Projects & Development

/Attachment

1. "Exemptions to NRC Regulations," 10 CFR 50

EXEMPTIONS TO NRC REGULATIONS

In some cases, it was determined that the regulations in 10 CFR Part 50 were not appropriate for the design certification of the AP600. These rules are not appropriate because of the incorporation of passive safety systems into the AP600 and other changes in technology. For the AP1000, the following rules are also not appropriate for the same reasons.

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 following discussion was provided in Reference 1 to support the exemption to this regulation for AP600. It is modified below to reflect our proposed justification for AP1000.

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 ~~AP600~~ **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

The following discussion was provided in Reference 1 to support the exemption to this regulation for AP600. It is modified below to reflect our proposed justification for AP1000.

10 CFR 50.62 requires the automatic initiation of the auxiliary feedwater system under conditions indicative of an ATWS. The ~~AP600~~ **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 ~~AP600~~ **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~~ **AP1000** 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 following discussion was provided in Reference 1 to support the exemption to this regulation for AP600. It is modified below to reflect our proposed justification for AP1000.

The ~~AP600~~ **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 ~~SSAR 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 ~~AP600~~ **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 ~~AP600~~ **AP1000** meets the exemption criteria of 10 CFR 50.12 (a)(1) and (a)(2)(ii).