May 1, 1998 SECY-98-097

FOR: The Commissioners

FROM: L. Joseph Callan /s/
Executive Director for Operations

SUBJECT: ADVANCE FINAL SAFETY EVALUATION REPORT ON THE WESTINGHOUSE AP600 STANDARD DESIGN

PURPOSE:

To inform the Commission of the staff's intent to issue the advanced final safety analysis report (FSER) on the Westinghouse Electric Company's AP600 design, which discusses the results of the staff's review of the standard safety analysis report (SSAR), probabilistic risk assessment (PRA), Tier 1 information, and other related documents on the AP600.

BACKGROUND:

In its staff requirements memorandum (SRM) of December 15, 1989, the Commission directed the staff to provide the Commission with a copy of all draft or final SERs on standard designs before they are issued. The Commission further directed the staff to highlight and discuss any significant policy issues.

DISCUSSION:

On June 26, 1992, Westinghouse tendered its application for certification of the AP600 standard design with the NRC. The application was submitted in accordance with Subpart B, "Standard Design Certifications," of 10 CFR Part 52, and Appendix O, "Standardization of Design: Staff Review of Standard Designs," to 10 CFR Part 52. The application included the AP600 SSAR and the PRA. In addition, to support the design certification application, on December 15, 1992, Westinghouse submitted the AP600 Tier 1 information (certified design material) (which includes the inspections, tests, analyses, and acceptance criteria); a comparison of the design to the

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Electric Power Research Institute's Advanced Light-Water Reactor Utility Requirements Document; a discussion of how operating experience was incorporated into the design; and a discussion of severe accident mitigation design alternatives. The application was accepted formally as a docketed petition for design certification on December 31, 1992.

The staff is reviewing this application using the procedures specified in Subpart B of 10 CFR Part 52 and in accordance with the applicable regulatory standards of the standard review plan (NUREG-0800). In addition, the staff followed the Commission's guidance provided in the SRMs for the Commission papers referenced throughout the attached report. In particular, SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor Designs," dated April 2, 1993; SECY-94-084, "Policy and Technical Issues Associated With the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs," dated March 28, 1994; and SECY-95-132, "Policy and Technical Issues Associated With the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY-94-084)," dated May 22, 1995, identified staff positions generic to passive LWR design certification policy issues. SECY-96-128, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," dated June 12, 1996, and SECY-97-044 "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," dated February 18, 1997, identified staff positions on issues specific to the AP600 design. In its SRMs dated July 21, 1993; June 30, 1994; June 28, 1995; January 15, 1997; and June 30, 1997, the Commission gave its decisions on these matters as they pertain to passive plant designs and, specifically, to the AP600 design.

In each section of the advanced FSER in which the staff found the AP600 to be acceptable according to the review criteria and guidance discussed therein, the staff indicates that, except as discussed in the FSER (see Section 1.9 for a summary of the open items), Westinghouse has submitted a sufficient amount of design detail for the NRC to make its safety finding. The regulations in 10 CFR 52.47(a)(2) describe the level of design information needed to certify a standard design. Determining the acceptable level of design detail necessary for the staff to make its safety findings was one of the most challenging aspects of the staff's review. The SRM of December 4, 1990 for SECY-90-377, "Requirements for Design Certification Under 10 CFR Part 52," dated November 8, 1990, set forth the Commission's position on the level of design information required for a certification application, and the staff followed that guidance in preparing this document.

In accordance with 10 CFR 52.48, the staff used the current regulations in 10 CFR Parts 20, 50, 73 and 100 in reviewing Westinghouse's application for design certification of the AP600 design. As a result of its review, the staff identified exemptions that may be required for the AP600 design. A listing of these exemptions is provided in Section 1.6 of this report.

Because of the unique nature of the AP600 design, Westinghouse implemented an extensive testing program to provide data on the passive safeguards systems. These data validate the safety analysis methods and computer codes, and provide information to assess the design margins in the passive safety system performance. The staff's evaluation of the testing program required to meet 10 CFR 52.47(b)(2) is discussed in Chapter 21 of this report.

CONCLUSIONS:

In accordance with the schedule presented in SECY-97-298, "Revised Schedule for the Staff's Review of the AP600 Design Certification Application," dated December 24, 1997, the staff has prepared the attached Advance FSER to describe the status of the staff's review and to facilitate the review of the Advisory Committee on Reactor Safeguards (ACRS). After the ACRS has completed its review and the remaining open issues (identified in Section 1.9 of the report) are resolved, the staff will publish the final version of this report, which is currently scheduled for August 1998.

The staff concludes that the attached Advance FSER contains no new policy issues. However, the staff will be apprising the Commission of two technical matters, which concern the unique approaches that the AP600 takes to address fire protection and the spent fuel pool cooling (following events such as earthquakes, fires, passive failures, or multiple active failures). A Commission paper is being developed to discuss the results of the staff's review of these matters.

When this paper is made publicly available, the staff will issue the attached report to Westinghouse to inform it of the staff's current findings, including the outstanding technical issues that must be resolved. The staff will discuss the resolutions of the remaining issues in the published FSER.

COORDINATION:

The Office of the General Counsel (OGC) has reviewed the Advance FSER, and has not identified any concerns that raise a legal objection. However, a final determination of no legal objection is not expected until issuance of the FSER and final design approval. To the extent practicable, clarifications requested by OGC have been incorporated in the document. OGC will be working with NRR to incorporate additional changes to the document that are intended to clarify the basis for the staff's safety findings.

DOCUMENT AVAILABILITY

The staff intends to make this paper publicly available within 5 working days from the date of this paper.

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Attachment:
Advance Final Safety Evaluation Report
on the Westinghouse AP600 Standard Design

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