

OCT 18 1983

3

MEMORANDUM FOR: Frank Miraglia, Assistant Director
for Safety Assessment
Division of Licensing

FROM: R. W. Houston, Assistant Director
for Reactor Safety
Division of Systems Integration

SUBJECT: WAPWR REVIEW

- Reference:
1. Eisenhut, D. G., letter on Project No. 668 to E. P. Rahe Jr., Westinghouse Electric Corporation, May 3, 1983.
 2. "WAPWR Preliminary Reference Standard Plant, Primary Side Safeguards Module," Westinghouse Nuclear Energy Systems, (no report number or date, provided to NRC during meeting of June 13, 1983.)
 3. Eisenhut, D. G., letter on Project No. 668 to E. P. Rahe Jr., Westinghouse Electric Corporation, August 12, 1983.
 4. "WAPWR Safety Review," (DRAFT), NRC, August 1983.

Plant Name: Westinghouse Advanced Pressurized Water Reactor
(WAPWR)

Docket Number: None

Licensing Stage: Pre-PDA

TAC No.: 668

Responsible Branch: SSPB

Project Manager: G. Meyer

DSI Branch Involved: RSB (Primary Responsibility)

Reference 1 outlines the NRC approach for review of the WAPWR Primary Side Safeguards System (PSSS) Module (Ref. 2). Reference 3 provides an initial conclusion regarding that review. Summarized herein are the findings of the review. Two additional documents are being prepared which supplement the information contained in this memorandum. The first covers the details of our initial review of reference 2. The second summarizes and documents information exchanged during recent meetings and telephone calls with Westinghouse. We will send these to you as soon as they are completed.

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OCT 18 1983

With respect to review of the PSSS Module, we found:

1. RSB, with primary review responsibility, could conduct an SER type review of the primary subject matter.
2. Other branches participating in the review included AEB, ASB, CSB, ICSB, MEB, and SGEB. These reviewers, who did not have a primary review responsibility, were less successful because the information needed for review was incomplete. These branches normally require information that apparently will be contained in other modules, or they conduct a review in their primary review responsibility area and review material contained in the PSSS Module as supplementary to their primary review.
3. The meetings prior to and following module submittal by Westinghouse were valuable. —
4. Westinghouse should provide as complete coverage of the primary subject matter as is practical. Backup material and secondary subject matter material should also be provided.
4. Generic material, such as material pertinent to missiles and to protection of equipment from piping failures, should be assembled by subject. Each subject should be submitted for review when completely covered.
6. Changes in previously submitted material should be clearly controlled and identified.

We have conducted a limited review of portions of Reference 2. The preliminary conclusions from that review are:

1. The Primary Side Safeguards System (PSSS) Module describes many items which appear to increase the protection of the health and safety of the public when the WAPWR design is compared to the design of existing nuclear plants. This includes four separate SI trains, the emergency water storage tank (EWST), enclosure of the pumping modules in "pump houses" so that leakage can be returned to containment, elimination of valve realignment for recirculation, and the core reflood tanks, as well as other features.
2. A number of potential deviations exist with respect to regulatory guidance, some of which may not be acceptable to the staff. We understand the Westinghouse "Licensing Control Document" is being revised. The Document should be submitted promptly by Westinghouse and reviewed by the staff to receive full benefit from the early review process.
3. Overall, the preliminary reviewer assessment is that a significant improvement in protection of the health and safety of the public has been achieved in the WAPWR design as

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OCT 18 1983

described in Reference 2 and related information, when the WAPWR design is compared to the design of existing nuclear plants and significant flexibility in dealing with potential accidents has been provided. Numerous examples of design improvements which reflect operating and accident experience and understanding have been provided. Many of these improvements can only be incorporated at the time of design of a new plant.

More recent communications with Westinghouse clearly show the design to be evolving and changing. Some of the changes are, in principle, not anticipated to represent review hurdles. Others are perceived by the reviewers to represent reduction in safety margin from what can be practically achieved with existing knowledge. The decision to eliminate the "pump house" concept for the present design, and the decision not to select four electrical trains are examples. Although these are not required to meet existing regulations, and in the case of the pump houses are not intended to be classified as safety related, they nevertheless are potentially of significant benefit, particularly in prevention and mitigation of accidents. Consequently, we need to have a better understanding of Westinghouse's justification and bases for these decisions. We believe these decisions should be made in conjunction with decisions related to resolution of generic issues such as station blackout (A-44) and decay heat removal (A-45), and in conjunction with insights obtained from the plant PRA. Such an approach would be consistent with the Commission's proposed statement on Severe Accidents and Related Views on Nuclear Reactor Regulation (FR16014, Apr. 13, 1983).

Original Signed By *B. Sheron*
 R. Wayne Houston

R. Wayne Houston, Assistant Director
 for Reactor Safety
 Division of Systems Integration

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OCT 18 1983

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