

June 14, 2007

Ms. Andrea Sterdis, Manager
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SUBJECT: RESPONSE TO WESTINGHOUSE AP1000 DESIGN CENTERED WORKING
GROUP LETTER OF MARCH 2, 2007

REFERENCE: WESTINGHOUSE ELECTRIC COMPANY LETTER TO U.S. NUCLEAR
REGULATORY COMMISSION, PROJECT NUMBER 740, "AP1000 DESIGN-
CENTERED WORKING GROUP MEETING ON FEBRUARY 15, 2007,"
DCP/NRC1839, MARCH 2, 2007 (ADAMS ACCESSION NO. ML070650347).

Dear Ms. Sterdis:

The NRC staff participated in the AP1000 Design-Centered Working Group (DCWG) public meeting of February 15, 2007. As a follow-up to that meeting, Westinghouse Electric Company provided the referenced letter on March 2, 2007 and requested feedback from the staff on proposed approaches to address the probabilistic risk assessment (PRA) in the combined license (COL) applications. However, the staff's response to this letter was dependent on the Commission's vote on the final rule to update Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52 and the accompanying Staff Requirements Memorandum (SRM), particularly with regard to the requirements for updating the PRA from the design certification. The SRM was issued on April 11, 2007. The enclosure provides the staff's response to Westinghouse's proposed approaches.

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Please contact me at (301) 415-2304, if you have any other questions on this issue.

Sincerely,

/RA/

Michael J. Miernicki, Project Manager
AP1000 Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

Project No.: 740

Enclosure: As stated

cc: w/encl

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Response to Westinghouse AP1000
DCWG Letter of March 2, 2007

REFERENCE: WESTINGHOUSE ELECTRIC COMPANY LETTER TO U.S. NUCLEAR REGULATORY COMMISSION, PROJECT NUMBER 740, "AP1000 DESIGN-CENTERED WORKING GROUP MEETING ON FEBRUARY 15, 2007," DCP/NRC1839, MARCH 2, 2007 (ADAMS ACCESSION NO. ML070650347).

Background

The NRC staff participated in the AP1000 Design-Centered Working Group public meeting of February 15, 2007. As follow-up to that meeting, Westinghouse Electric Company provided the referenced letter on March 2, 2007, and requested feedback from the staff on proposed approaches to address the probabilistic risk assessment (PRA) in the combined license (COL) applications. However, the staff's response to this letter was dependent on the Commission's vote on the final rule to update Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52 and the accompanying Staff Requirements Memorandum (SRM), particularly with regard to the requirements for updating the PRA from the design certification. The SRM was issued on April 11, 2007.

Specifically, Westinghouse requested staff feedback on three proposed approaches to address the PRA in the COL applications:

- 1) Westinghouse proposed the use of an internal events checklist that identifies where the site-specific design might impact the design certification PRA. Each COL applicant would determine if the site-specific design falls within the identified PRA modeling assumptions. If not, each COL applicant would identify an impact, and the impact would be evaluated by Westinghouse to determine the PRA impact.
- 2) To evaluate site-specific external events, Westinghouse proposed that it would prepare a list of external events (e.g., high winds, external floods, transportation/nearby facilities). COL applicants would then determine the applicability or non-applicability to each site. If the external event in question is deemed applicable, a site-specific initiating event frequency is to be determined. If events can not be screened out as insignificant or low risk (using an approach similar to NUREG-1407), Westinghouse would perform a quantitative external events PRA for the event in question.
- 3) The Level 3 PRA was used in the Severe Accident Mitigation Design Alternatives (SAMDA) and is referenced in Appendix 1B of the AP1000 Design Control Document (DCD). Westinghouse has proposed to submit a technical report to remove the Level 3 PRA Table and Figure from Chapter 19 and relocate it to Appendix 1B. No additional Level 3 PRA is to be performed for COL.

Staff response

- 1) With regard to item 1, 10 CFR 52.79 requires that if a COL applicant references a standard design certification then the plant-specific PRA information must use the PRA information for the design certification and must be updated to account for site-specific design information and any

design changes or departures.

The proposed approach for internal events by Westinghouse should have sufficient detail to address site-specific and plant-specific design information at the time of COL application (e.g., site-specific initiator frequencies or balance-of-plant systems reliabilities). The approach should demonstrate that any site-specific or plant-specific variability “falling within identified PRA modeling assumptions” results in no significant changes to the risk insights assuming a plant-specific PRA were performed. The staff would benefit greatly in its review of the COL applications if Westinghouse provided copies of the internal events checklist at Westinghouse’s earliest convenience, and the guidance provided COL applicants for completing the checklist.

However, the staff notes that the requirement per the SRM is that COL licensees “...are required to develop and maintain a Level 1 and Level 2 PRA at the time of initial operation of the reactor. The PRA shall cover those initiating events and modes of operation for which NRC-endorsed consensus standards exist one year prior to initial operation.” Thus, the COL licensees will need to maintain the plant-specific PRA (a living PRA) as needed to support its uses and applications such that the PRA continues to reasonably reflect the as-designed, as-built, and as-operated plant.

2) With regard to item 2 on external events, the discussion regarding the plant-specific and site-specific PRA in the response to item 1 above is pertinent.

The staff further notes that NUREG-1407 and ANSI/ANS-58.21-2003 allow external hazard screening if a plant meets the 1975 version of the Standard Review Plan (SRP) NUREG-0800. To the extent that the SRP has been updated and made available in 2007, COL applications should make use of this latest version. The staff agrees in principle to the use of the NUREG-1407 approach, but the staff notes that the screening values were for the current generation of operating plants. The COL application should consider the relative value of what is screened out versus the baseline risk values of the AP1000 design.

Depending on the risk-informed applications proposed by the applicant at the COL application stage, conservatively derived risk values for some events could mask more precisely derived values from internal events. Therefore, the COL applicant should develop guidance for risk-informed applications when a combination of conservatively and precisely derived risk values are generated. Lastly, if a bounding, screening, or other vulnerability-type assessment was used at the COL application phase (e.g., PRA-based seismic margins, or Fire Vulnerability Evaluation Methodology for fire), then the assessment would need to be converted into a PRA by the time of initial operation, if there are NRC-endorsed PRA consensus standards for these events in place one year prior to initial plant operations.

3) With regard to item 3, the staff notes that there are no requirements to maintain a site-specific level 3 PRA in Part 52 and therefore the staff finds the proposed approach regarding item 3 to be acceptable.

The staff will continue to work with Westinghouse, COL applicants, and the AP1000 Design Centered Working Group to address these and additional PRA-related issues as the need arises.

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