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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002591

August 11, 2009

Subject: Open Item AP1000 Design Certification Amendment Safety Evaluation Report Chapter 11

Chapter 11 of the NRC Safety Evaluation Report (SER) with Open Items for the AP1000 Design Certification Amendment includes one action identified as an Open Item. In communications with the NRC, Westinghouse has determined that our actions required to satisfy the open item have been completed.

Open Item (OI)-SRP11.3-CHPB-01 requests Westinghouse to submit a consequence evaluation of a gaseous waste system leak or failure and any proposed revisions to the AP1000 Design Control Document (DCD). The consequence evaluation has been completed and the proposed DCD changes were provided in Revision 1 to RAI-SRP11.3-CHPB-02. The response was in Westinghouse Letter DCP_NRC_002554 dated July 9, 2009. The response is provided as an attachment to this letter.

Please let me know if you have any questions or need anything else. Thank you.

Very truly yours,

Robert Sisk, Manager
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/Enclosure

1. RAI-SRP11.3-CHPB-02 R1

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AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP11.3-CHPB-02
Revision: 1

Question:

Section 11.3.3 is missing the consequence evaluation of a gaseous waste system leak or failure. The acceptance criteria in SRP 11.3 require this evaluation and rely on the approach specified in Branch Technical Position 11-5. Based on the SER for Revision 15, the applicant performed this analysis in response to an RAI, but the description of the analysis and results were not included in the DCD. The applicant should add its analysis to the DCD and provide sufficient detail for the staff to perform an independent analysis.

The staff needs the results of this analysis to determine the classification of the radioactive waste system for design purposes. Regulatory position C.5 in Regulatory Guide 1.143 uses estimated doses from system failures to classify the design hazard of the waste management system. Based on this design hazard classification, the building containing the radwaste system and the system itself must comply with specific design standards described in the Regulatory Guide. Without this analysis, the staff can not determine the proper design classification and applicable design standards.

10 CFR 52.63 allows for this change to the DCD. This information is necessary to provide adequate protection of the public health and safety.

Westinghouse Response: (Revision 0)

The AP1000 results of the analysis of a gaseous waste system leak were not expected to differ significantly from the AP600 results. Therefore, to support the original AP1000 RAI on this subject (RAI 460.005(A)), a preliminary evaluation was performed and sufficient detail was provided in the RAI response. The supporting calculation update to AP1000, with the updated X/Q value, is expected to be finalized March 2009.

Section 11.3.3 of the DCD will be revised to describe the following analysis and results when this calculation is completed:

- A pre-existing, beyond-design-basis condition of operation with 1% fuel defects; (that is, noble gas concentrations in the reactor coolant are assumed to be four times higher than the AP1000 design basis as shown in DCD Table 11.1-2)
- A 1-hour bypass of the WGS charcoal beds
- 30 minutes decay prior to release to the environs
- A conservative site boundary X/Q with respect to the assumptions documented in DCD Chapter 5 of the Tier 1 documentation

With these assumptions, we estimate a site boundary whole body dose of 0.1 rem.

With this analysis, the staff should be able to determine design classifications and standards.

Additional Westinghouse Response: (Revision 1)

The calculation indicated above is complete. The basis for evaluation of a gaseous radwaste system leak, and the results of that evaluation, will be incorporated into Section 11.3.3 of the DCD as described below.

Design Control Document (DCD) Revision:

11.3.3.4 Estimated Doses

With the annual airborne releases listed in Table 11.3-3, the air doses at ground level at the site boundary are 2.1 mrad for gamma radiation and 10.1 mrad for beta radiation. These doses are based on the annual average atmospheric dispersion factor from Section 2.3 (2.0×10^{-5} seconds per cubic meter). These doses are below the 10 CFR 50, Appendix I, design objectives of 10 mrad per year for gamma radiation or 20 mrad per year for beta radiation.

The radiological consequences due to a single failure of an active component in the gaseous radwaste system are evaluated assuming a 1-hour bypass of the delay beds and 30 minutes of decay before release to the environs. This analysis assumes a pre-existing condition of operation with reactor coolant activity corresponding to 1 percent fuel defects as described in the Note for Table 11.1-2. Using the site boundary (0-2 hr) atmospheric dispersion factor from Table 2-1, the site boundary whole body dose is 0.1 rem.

PRA Revision:
None

Technical Report (TR) Revision:
None