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Your ref: Docket No. 52-006
Our ref: DCP/NRC2331

December 23, 2008

Subject: AP1000 Response to Request for Additional Information (SRP15)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 15. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in the response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Enclosure 1 provides the response for the following RAIs:

RAI-SRP15.4.8-SRSB-01

Questions or requests for additional information related to the content and preparation of this response should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Enclosure

1. Response to Request for Additional Information on SRP Section 15

D063
NRO

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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 15

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP15.4.8-SRSB-01
Revision: 0

Question:

In DCD Revision 17, Sections 15.4.8.1.1.5 and 15.4.8.1.1.6 have been removed as failure mechanisms. Technical report APP-GW-GLE-016 was submitted to provide technical justification for changes related to the in-core instrumentation design. No technical basis was presented in the technical report as to why longitudinal and circumferential failures of the control rod travel housing (DCD Sections 15.4.8.1.1.5 and 15.4.8.1.1.6, respectively) are no longer an issue. It should be noted that APP-GW-GLE-016 does not discuss Sections 15.4.8.1.1.5, 15.4.8.1.1.6, or list it as a DCD change to be made.

a) Provide technical justification as to why the failure mechanisms detailed in DCD, Revision 15, Sections 15.4.8.1.1.5 and 15.4.8.1.1.6 are no longer considered.

Westinghouse Response:

Westinghouse removed the information in DCD Section 15.4.8.1.1.6 as part of the DCD impact for the Design Change for In-core Instrumentation Grid, Quicklocs and Changes to Integrated Head Package. The DCD Impact is documented in AP1000 DCD Impact Document APP-GW-GLE-016. Westinghouse transmitted APP-GW-GLE-016 to the NRC in letter DCP/NRC2190 on July 7, 2008. The DCD markup included in APP-GW-GLE-016 does include the removal of the information in DCD Section 15.4.8.1.1.6. APP-GW-GLE-016 does not, however, include removal of the information in Section 15.4.8.1.1.5. To be consistent with the removal of DCD Section 15.4.8.1.1.6, Westinghouse also removed the information in Section 15.4.8.1.1.5 during the development of DCD Revision 17.

Westinghouse removed the information in Sections 15.4.8.1.1.5 and 15.4.8.1.1.6 because the RCCA housing is an ASME Code, Section III vessel and failures of ASME Code Section III vessels are not considered credible. This is addressed in DCD Section 3.9.4.1.1, Control Rod Drive Mechanism (CRDM). DCD Section 3.9.4.1.1 is referenced in DCD Section 15.4.8.1.1.4, Effects on Adjacent Housings. DCD Section 3.9.4.1.1 addresses failure mechanisms of the RCCA housing as follows.

> The design and construction of the control rod drive mechanism includes provisions to establish that gross failure of the housing sufficient to allow a control rod to be ejected from the core is not credible. These provisions include the following:
>
> - Construction of the housing of Type 304 or 316 stainless steel, which exhibits excellent notch toughness at the temperatures that will be encountered.

- Stress levels in the mechanism are not affected by system thermal transients at power or by thermal movement of the reactor coolant loops.

- The control rod drive mechanisms are hydrotested after manufacture at a minimum of 125 percent of system design pressure.

- The housings are hydrotested at a minimum of 125 percent of system design pressure after installation to the reactor vessel head and during the hydro test of the completed reactor coolant system.

The analyses of postulated accidents discussed in Chapter 15 include the evaluation of a nonmechanistic control rod ejection. Section 3.5 does not consider ejected rods to be a credible missile.

The Section 15.4.8 assumption of a control rod ejecting resulting from a RCCA housing failure is a nonmechanistic failure used to provide a conservatively rapid positive reactivity insertion for the analysis of the consequence of the reactivity insertion together with an adverse core power distribution, possibly leading to localized fuel rod damage. Westinghouse removed the information in Sections 15.4.8.1.1.5 and 15.4.8.1.1.6 because the information addressed dynamic effects of a failed RCCA housing not the consequences of reactivity insertion.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None