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Subject: Completion of Test Program to Demonstrate Corrosion Resistance of Reactor Coolant Pump Retaining Ring Material

References:

- 1) Westinghouse letter DCP_NRC_003104; "Commitment to Perform Validation testing of RCP Flywheel Material," dated December 10, 2010
- 2) ACRS Letter, "Report on the Final Safety Evaluation Report Associated with the Amendment to the AP1000 Design Control Document," dated December 13, 2010.

During the December 3, 2010 Advisory Committee on Reactor Safeguards (ACRS) full committee meeting on the AP1000® Design Certification Amendment Application, the ACRS action item associated with the Reactor Coolant Pump flywheel retainer ring material was discussed between Westinghouse and ACRS members. During this meeting, Westinghouse presented its basis for selection of the flywheel retainer ring material. Westinghouse concluded that the material had been evaluated in more aggressive environments compared to primary water exposure, and the flywheel retaining ring would not be expected to be exposed to primary water because it is encased within a corrosion resistant material.

However, the ACRS pointed out that a defect in the casing could occur which could then expose the retainer ring material to primary water. As such, the ACRS expressed concern that "adequate stress corrosion cracking resistance had not been demonstrated by actual testing in primary water environment in which the flywheel is designed to operate."

Westinghouse considers the flywheel material and design acceptable as-is without additional testing and affirms that existing NRC safety conclusions related to this material remain valid. However, to be responsive to the ACRS concern, Westinghouse made a verbal commitment during the December 3, 2010 meeting to validate the expected resistance of this material to stress corrosion cracking by performing corrosion testing of the flywheel material in primary water environment. This commitment was documented in Reference 1. Reference 2 is the ACRS final letter report on the AP1000 Amendment Safety Evaluation Report, in which the ACRS notes that Westinghouse has responded to ACRS concerns.

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The purpose of this letter is to bring closure to this commitment. Westinghouse has completed slow strain rate testing of the reactor coolant pump flywheel retaining ring material, in prototypical primary water conditions per industry standard test guidelines. The results verified the material to have sufficient toughness and ductility under tensile loading in the primary coolant environment, thus demonstrating adequate resistance to stress corrosion cracking. Based on these positive results, Westinghouse determined no further crack growth rate testing will be required. The test program and results are documented in an internal Westinghouse proprietary report.

If you have any questions, please contact me.

Very truly yours,



Paul A. Russ
Director, U.S. Licensing

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