

April 14, 2010

Mr. W. Anthony Nowinowski, Program Manager
PWR Owners Group, Program Management Office
Westinghouse Electric Company
Mail Stop ECE 5-16
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RE: PRESSURIZED WATER
REACTOR OWNERS GROUP TOPICAL REPORT WCAP-17100-P/NP,
REVISION 1, "PRA MODEL FOR THE WESTINGHOUSE SHUT DOWN SEAL"
(TAC NO. ME1785)

Dear Mr. Nowinowski:

By letter dated March 4, 2010 (Agencywide Documents Access and Management System Accession No. ML101020569), the Pressurized Water Reactor Owners Group (PWROG), submitted for U.S. Nuclear Regulatory Commission (NRC) staff review topical report (TR) WCAP-17100-P/NP, Revision 1, "PRA Model for the Westinghouse Shut Down Seal." Upon review of the information provided, the NRC staff has determined that additional information is needed to complete the review. On April 1, 2010, Mr. Chad Holderbaum, PWROG project manager, and I agreed that the NRC staff will receive your response to the enclosed Request for Additional Information (RAI) questions within 30 days of the date of this letter. If you have any questions regarding the enclosed RAI questions, please contact me at 301-415-4053.

Sincerely,

/RA/

Jonathan Rowley, Project Manager
Licensing Processes Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Project No. 694

Enclosure:
RAI questions

cc w/encl: See next page

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DATE	4/2/10	4/2/10	4/13/10	4/14/10

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REQUEST FOR ADDITIONAL INFORMATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
WCAP-17100-P/NP, REVISION 1
PRESSURIZED WATER REACTOR OWNERS GROUP
PROJECT NO. 694

By letter dated March 4, 2010, the Pressurized Water Reactor Owners Group requested review and acceptance of WCAP-17100-P/NP, Revision 1, for referencing in regulatory actions. The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has the following questions:

1. The only statements provided for polymer ring radiation tests were "the polymer will not cross-link after 9 years worth of expected radiation to change its properties (glass transition temperature, melt temperature, or strength)" in Section 3.1.1.2 and "Polymer exposed to 6-year & 9-year equivalent radiation. Sealed leak-tight at station blackout conditions. No difference in performance from non-radiated" in Table 3-2. Please provide a description of the tests.
2. In Sections 3.2.3.9 and 3.2.3.10, it was stated that "there were no flow rate changes." Please provide the initial flow rate. The NRC assumed approximately 0, but would like confirmation.
3. In Section 3.2.3.10, no leakage rates were provided, only saying that there were "small flow increases with extreme displacements." Please provide the data for these tests.
4. Which is the harder material, the piston ring or the retaining ring? In Section 3.2.3.11.5, it is stated that the piston ring would wear away if the operator response is delayed, yet the wear on the retaining ring was not mentioned. If the piston ring is a harder material, then the retaining ring would suffer the most damage if the polymer ring was completely worn away in an unacknowledged shut down seal (SDS) actuation. If they're the same material, then the retaining ring would be damaged and might not withstand the reactor coolant system pressures. Additionally, it was stated in Section 3.1.1.4 that the piston ring was designed to restrict flow to 1.5 gallons per minute (gpm); however, Section 3.2.3.11.6 states that the piston ring restricts flow to 19 gpm if the polymer ring is worn away. Please describe the differences in the conditions that lead to the different flow values.
5. The extrusion tests in Table 3-7 are essentially endurance tests with the extrusion measurement occurring after the test conclusion, yet the first 3 tests in Table 3-7 are not included on Table 3-3. Please explain this discrepancy (i.e. was leakage not measured in the 3 tests).
6. The NRC would like to confirm that no sealing tests were performed after the low speed testing (Section 3.2.3.11.4.).

ENCLOSURE

7. What are normal RCP vibration levels, since only a 2 mil vibration was used for the vibration testing?
8. The SDS is described as to prevent thermal shock to the reactor coolant pump (RCP) seal package when seal cooling is restored. Section 1.2.3.4.6 can be interpreted that the RCP seal package O-rings are considered susceptible to thermal shock in addition to the No. 2 and No. 3 seals. Please provide a more clear description of the seal package components that are susceptible to thermal shock.