

REQUEST FOR ADDITIONAL INFORMATION 311-2347 REVISION 1

4/2/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 15.04.06 - Inadvertent Decrease in Boron Concentration in the Reactor Coolant (PWR)
Application Section: 15.4.6

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

15.04.06-1

Question 15.4.6-1

State whether the calculations for boron dilution events are done at the beginning or end-of-cycle. Explain why the other condition does not need to be considered.

15.04.06-2

Question 15.4.6-2

Provide additional information explaining why the probability of dilution during refueling is so sufficiently low that it does not need to be analyzed.

15.04.06-3

Question 15.4.6-3

It is stated that the boron dilution event from power conditions is bounded by the analysis for the uncontrolled RCCA bank withdrawal at power. Provide detailed information on the rate of reactivity insertion for both events and explain how the rate of insertion is calculated for the boron dilution event.

15.04.06-4

Question 15.4.6-4

Provide analysis of boron dilution events in Modes 4 and 5 with no RCPs running and Mode 6. Also, specifically state in detail the administrative controls in place that make boron dilution events in Mode 6 and Modes 4 and 5 with no RCPs running impossible.

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15.04.06-5

Question 15.4.6-5

Provide details regarding the calculations done to determine the time available for operator action during the course of the event. Specifically, provide the boron and water mass equilibrium equations utilized.