REQUEST FOR ADDITIONAL INFORMATION 745-5718 REVISION 3

4/27/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 05.04 - Reactor Coolant System Component and Subsystem Design
Application Section: DCD Chapter 5.04.01.02

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

05.04-2

Question 05.04.01.02-1

In regard to loss of seal water injection, the applicant states the following: “Loss of injection water flow may be detected with a flow meter at the seal injection line. This condition will normally lead to an increase in seal and bearing inlet temperature and an increase in the No. 1 seal leak rate because reactor coolant flow into the RCP seals. Under these conditions, however, the CCW continues to provide flow to the thermal barrier heat exchanger; which cools the reactor coolant. The pump is therefore able to maintain safe operating temperatures and operate safely long enough for safe shutdown of the pump.” To complete the review, the staff requests the applicant to provide additional information to the following questions.

(1) Upon loss of seal injection, is there an flow alarm in the MCR from the flow meter?

(2) How long can the pump operate in this condition? What is the basis for the time?

05.04-3

Question 05.04.01.02-2

In respect to loss of CCW to the thermal barrier, applicant states the following: “If loss of CCW should occur, seal injection flow continues to be provided to the RCP. The pump is designed so that the seal injection flow is sufficient to prevent damage to the seals with a loss of thermal barrier cooling.” To complete the review, the staff requests the applicant to provide additional information in more detail to the following:

(1) Since CCW provides cooling water to both the CVCS and the thermal barrier, explain what is meant by loss of CCW, and

(2) If “loss of CCW” includes cooling flow to CVCS, explain how seal injection flow would provide adequate cooling for “up to 10 minutes” to prevent seal damage. Include the estimated seal water injection temperature.

The applicant refers to “instructions are prepared for loss of CCW and seal injection.” Are these instructions operating procedures? If so, identified the DCD section that governs the preparation of these instructions.