REQUEST FOR ADDITIONAL INFORMATION NO. 78-1190 REVISION 0

10/1/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 14.02 - Initial Plant Test Program - Design Certification and New License Applicants

Application Section: 14.2 Initial Plant Test Program

QUESTIONS for Quality and Vendor Branch 1 (AP1000/EPR Projects) (CQVP)

14.02-88

> RAI 1190, Question 4034 requests that MHI provide additional information to indicate how RHR decay heat removal function will be demonstrated during the Remote Shutdown Test described in DCD Section 14.2.12.2.4.6.
>
> RG 1.68, App A.5.l states in part that the design capability of all systems and components provided to remove residual or decay heat from the reactor coolant system (RCS), including the turbine bypass system, atmospheric steam dump valves, residual heat removal (RHR) system in steam condensing mode, and auxiliary feedwater system be demonstrated. US-APWR DCD Table 14A-1 (page 14A-18) indicates that the Remote Shutdown Test will meet the requirement provided in RG 1.68, App A.5.l. The Remote Shutdown Test demonstrates, in part, the capability to achieve and maintain the plant in hot standby condition for a minimum of 30 minutes. However, Hot Standby is identified as greater than or equal to 350°F per Technical Specification Table 1.1-1, "MODES," in DCD Chapter 16. And, RHR is not placed into operation until reactor coolant temperature and pressure are reduced to approximately 350°F and 400 psig, respectively per DCD Chapter 5.
>
> DCD Section 14.2.12.2.4.6 should be revised to specifically note that RHR decay heat removal capability must be demonstrated or a separate test for this functional demonstration should be identified. This may require an endpoint change in DCD Section 14.2.12.2.4.6 from MODE 3, Hot Standby to MODE 4, Hot Shutdown (per TS mode definitions hot shutdown is $350^{\circ}F > T_{avg} > 200^{\circ}F$).
>
> BNL RAI 14.2-74

14.02-89

> RAI 1190, Question 4035 follows up MHI's original response to RAI 28, Question 14.02-16(1).
>
> RAI 28, Question 14.02-16(1) noted that US-APWR DCD Section 14.2.12.2.1.3, "Inverse Count Rate Ratio Monitoring for Fuel Loading," DCD Section 14.2.12.2.1.4, "Fuel Loading Instrumentation and Neutron Source Requirements Test," and DCD Section

14.2.12.2.1.11, "RCS Sampling for Fuel Loading," should be added to DCD Section 14.2.12.2.1.1, "Initial Fuel Loading," as prerequisites.

MHI's response to RAI 28, Question 14.02-16(1) noted that general prerequisites were added to DCD Section 14.2.12.2.1.1 based on the acceptable response to RAI 14.02-14. MHI declined to add the specific tests (14.2.12.2.1.3, 14.2.12.2.1.4, and 14.2.12.2.1.11) as prerequisites for DCD Section 14.2.12.2.1.1 because MHI indicated that the additional general prerequisites would point to this need.

The NRC staff notes that the sequence of the tests listed in the DCD is not correct, with tests required to be performed prior to initial fuel load listed in the DCD after the initial fuel loading test.

MHI should discuss how the prerequisite tests for the initial fuel load will be tracked. The listed initial fuel load tests associated with DCD Section 14.2.12.2.1 are not presented in sequential order.

Specifically, the "Fuel Loading Instrumentation and Neutron Source Requirements Test," and the "RCS Sampling for Fuel Loading" test are listed after DCD Section 14.2.12.2.1.1, "Initial Fuel Loading," and are not specifically listed as prerequisites for DCD Section 14.2.12.2.1.1. Also, the "Inverse Count Rate Ratio Monitoring for Fuel Loading" test must be done concurrently with the "Initial Fuel Loading," but is listed after DCD Section 14.2.12.2.1.1, "Initial Fuel Loading," and is not specifically listed as prerequisites for DCD Section 14.2.12.2.1.1.

Therefore, for clarity, MHI should reorder the listing of the testsin the DCD and/or list the specific tests by section number as prerequisites for DCD Section 14.2.12.2.1.1.

BNL RAI 14.2-12C(1) Sup. 01