

REQUEST FOR ADDITIONAL INFORMATION 252-1968 REVISION 0

3/2/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 09.02.02 - Reactor Auxiliary Cooling Water Systems
Application Section: 9.2.8 Turbine Component Cooling Water System

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

09.02.02-1

General Design Criteria (GDC) 60 requires nuclear power unit designs to include means to control the release of radioactive materials in gaseous and liquid effluents produced during normal reactor operation, including anticipated operational occurrences. Means must also be provided for monitoring effluent discharge paths and the plant environs for radioactivity that may be released in accordance with GDC 64 requirements. Additionally, 10 CFR 52.47(a)(6) and 10 CFR 20.1406 require applicants for standard plant design certifications to describe how facility design and procedures for operation will minimize contamination of the facility and the environment. In order for the staff to confirm compliance with these requirements, the design control document (DCD) needs to be revised to explain how the turbine component cooling water system satisfies the requirements specified by 10 CFR 20.1406, "Minimization of Contamination."

09.02.02-2

10CFR52.47, Content of application; technical information states that "the description shall be sufficient to permit understanding of the system design and their relationship to the safety evaluation". The staff determined that the information provided in design control document (DCD) Tier 2, Section 9.2.8 is incomplete and does not fully satisfy this requirement. This information should be added to Tier 2, Section 9.2.8 or Figure 9.2.8-1.

1. The instrument air system are not shown on the flow diagram for the air operated valves for temperature controls and stand pipe makeup which are described in Tier 2, DCD Section 9.2.8.2.2.5.
2. Describe if the turbine component cooling water system (TCS) pumps required any support system such as cooling water for the seals/motors.
3. Tier 2, DCD Section 9.2.9.2.1 states that "the temperatures in the system are moderate and the fluid pressure in the system is kept higher than the above saturation conditions at all locations in the system. This along with the control of valves and other design features of the system arrangement minimizes the potential for transient water hammer." Tier 2, DCD Section 9.2.8 does not have any similar discussion on water hammer design features. Describe in detail those design features and determine if Tier 1 DCD verification is required under Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC). In addition explain how control of valves and other design features water hammer is minimized. For example, during a loss of power, and before the system is

REQUEST FOR ADDITIONAL INFORMATION 252-1968 REVISION 0

- returned to service, describe the operator actions that will have to occur before the system can be started and describe if the TCS pumps auto start on low pressure during restoration from the loss of power condition.
4. Table 9.2.8-1, "TCS Component Parameters," is not noted in the Tier 2, DCD Section 9.2.8.
 5. The "Note" beside the chemical addition tank on Tier 2, DCD Figure 9.1.8-1 is missing information.
 6. Describe if the piping system or heat exchangers are designed for higher system flow condition where three pumps may be operating during pump swaps or heat exchanger flushing.
 7. Describe if the TCS pumps received a trip signal on low standpipe level due to net positive suction head consideration.
 8. Describe if a dike will be placed around the stand pipe atmospheric vent to capture any system chemical from entering the floor drain system. Normally added corrosion inhibitors should be prevented from entering any water waster systems.
 9. The cooling water flow from the non essential service water system is missing from Tier 2, DCD Figure 9.1.8-1 at the TCS heat exchangers.
 10. Tier 2, DCD Figure 9.1.8-1 flow lines to the loads are confusing. The flow lines appears to be touching and give the reviewer a sense that cooling supply lines and cooling return lines are interconnected.