

REQUEST FOR ADDITIONAL INFORMATION 434-3266 REVISION 1

7/30/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 10.04.01 - Main Condensers

Application Section: 10.4.1

QUESTIONS for Balance of Plant Branch 2 (ESBWR/ABWR) (SBPB)

10.04.01-2

US-APWR Supplemental RAI 10.4.1-1:

a)

In order to conform to General Design Criteria (GDC) 60 requirements, as it relates to failure of the main condenser (MC) system and potential explosion due to hydrogen buildup, in US-APWR RAI 10.4.1-2 dated March 2, 2009, the staff requested the applicant to provide additional information, with full justification. In its response, dated March 30, 2009, the applicant stated that under normal operating conditions, a pH controller and oxygen scavenger are injected into the steam generator (SG) secondary side water, as described in DCD Section 10.4.10, "Secondary Side Chemical Injection System." The applicant further stated that air, nitrogen, and ammonia are the main constituents in the non-condensable gases in the MC shells, and therefore hydrogen buildup is not expected in the MC. This is described in DCD Subsection 10.4.2.2.1, "General Description," of Section 10.4.2, "Main Condenser Evacuation System (MCES)." The applicant justified that, due to this mixture, the potential for hydrogen buildup within the condenser shell does not exist. Furthermore, the non-condensable gases are removed from the MC system by one of the two mechanical vacuum pumps, which is described in DCD Subsection 10.4.2.2.3, "System Operation," of the MCES. If one pump fails, it gives an alarm in the main control room, and the standby pump is started. This further decreases any potential for hydrogen buildup within the condenser shells. The staff finds the applicant responses acceptable, since it conforms to the GDC 60 criteria, as related to controlling excessive radioactive releases to the environment and also to control the buildup of hydrogen and explosive mixtures in the MC shells. Therefore, the NRC staff's concerns raised in US-APWR RAI 10.4.1-2 are resolved. However, the explanation of how these concerns are addressed in its response is not described in the DCD FSAR Section 10.4.1. Therefore, the staff requests the applicant to revise the FSAR Section 10.4.1 to reflect its responses to the above RAI 10.4.1-2.

b)

In order to meet the guidance of Item III.3.A (Review Procedures) of the SRP Section 10.4.3, as it relates to flood protection of the SSCs, In US-APWR RAI 10.4.1-3, the staff requested the applicant to provide additional information for the MC system, in the DCD Section 10.4.1.

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In its response, dated March 30, 2009, the applicant stated that in the yard area, the flood volume is directed away from the plant structures by virtue of the site grading and yard drainage system. In addition, water tight doors are installed in the doorways at the ground level, between turbine building and reactor building. This is described in FSAR Section 3.4.1.3, "Flood Protection from Internal Sources." Therefore, the applicant stated that the turbine building flooding does not affect the safety-related equipment in the reactor building. Also, in Section 3.4.1.3, the DCD states that there is no equipment to be protected from flooding in the turbine building. The staff reviewed FSAR Section 3.4.1.3 and verified that the explanations provided by the applicant are true and justified, and therefore finds the applicant response acceptable. However, in its response, the applicant indicated no revisions to the DCD providing the details identified in this response. Therefore, the staff requests the applicant to revise the DCD to reflect these responses in the FSAR Section 10.4.1.