

REQUEST FOR ADDITIONAL INFORMATION 836-6099 REVISION 3

10/11/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 06.02.02 - Containment Heat Removal Systems

Application Section: 6.2

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects)
(CIB1)

06.02.02-66

The staff requests that the applicant clarify whether it is only the containment spray water that could produce chemical debris due to contact with aluminum. Revision 3 of the US-APWR Design Control Document GSI-191 Tracking Report proposes changes in Section 6.2.2.3 and addition of COL 6.2(6) to identify and control the maximum amount of aluminum that could be exposed to the "containment spray water." Since aluminum chemical debris could be generated by any post-LOCA water that contacts aluminum in containment, it is not clear to the staff that a limit based on exposure to only the spray water is consistent with the design basis for aluminum chemical debris.

06.02.02-67

The staff requests that the applicant modify proposed DCD Section 6.2.2.3.10 (Chemical Effects Test) to clarify the purpose of the sump debris chemical effects testing. This proposed section of the DCD states that the objective of the testing was to evaluate the temperature at which chemical precipitates are expected to form. This is different than the objective of the test stated in other documents, such as the chemical effects test report (MUAP-08011-P, R0) and the sump strainer performance report (MUAP-08001-P, R5). These reports do not identify precipitation temperature as a test objective, and precipitation temperature was not discussed in the chemical effects test report.

06.02.02-68

The staff requests that the applicant discuss whether the chemical effects testing bounds the latest estimate of the sump water temperature profile. If the testing temperature profiles do not bound the latest estimate of the sump temperature profile, the staff requests that the applicant discuss any effects on the calculated chemical debris quantity. Revision 5 of MUAP-8001-P identifies the maximum sump water temperature as 256°F, but the chemical effects testing was performed and analyzed based on an estimated sump water temperature profile with a peak at 250°F. Since the amount of corrosion depends on time and temperature, a change in either the peak height or the shape of the temperature profile could mean the laboratory testing no longer bounds the expected plant conditions with respect to the amount of corrosion.