REQUEST FOR ADDITIONAL INFORMATION 790-5916 REVISION 3

7/26/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 06.02.04 - Containment Isolation System
Application Section: 6.2.4

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

06.02.04-56

RAI 6.2.4-56
Provide details on how the controlled leakage safeguard component areas are designed to arrest leakage should uncontrolled leakage occur in the single isolation valve shaft or bonnet seals in the SI and CS/RHR lines from the refueling water storage pit.
In part 2c of your response to RAI 729-5667 Question 6.2.4-55 you state the following: The piping and valve will be located in the same rooms as the SI pumps and CS/RHR pumps and heat exchanger (i.e., the safeguard component area as show in DCD Figure 6.5-2 through 6.5-9) which are designed to prevent flooding. Note 7 will be revised to add “Should a leak develop outside containment, the fluid will be contained by the controlled leakage safeguard component area”
Section 3.1.4.6.1 of the FSAR states the following: “Additionally, the ECCS is designed with sufficient redundancy (four trains) to accomplish its safety functions assuming a single failure of an active component or a passive component in the long term following an accident with one train out of service for maintenance.”
SRP 6.2.4 acceptance criterion 4 states the following:
“Design of the valve or the piping compartment should provide the capability to detect and terminate leakage from the valve shaft or bonnet seals”
The staff has reviewed this information and requests the following information on the design features of the compartment or the valve to not only contain leakage, but to arrest leakage, (prevent uncontrolled leakage from this single barrier) such that it would not pose a problem to nearby safety related equipment or reduce the effectiveness of the remaining trains of the RHR system in an accident.

1) Explain how the configuration will have the "capability to detect and **terminate** leakage from the valve shaft or bonnet seals”. Provide details on the design features of the space that details and justifies how leakage is contained in one of the safeguard component areas.
2) What is the holdup capacity of the compartment?
3) Provide details of any unique design features of these containment isolation valves that assure leakage from the valve shaft or bonnet seals is unlikely.
4) You state that the safeguard component area is designed to prevent flooding. The staff has reviewed your response to related RAI 649-5123 questions 19-484 and 19-497. Based on the responses to these questions, the staff understands that internal flooding in the controlled leakage safeguards component area was analyzed. The staff understands that these spaces have watertight doors and penetrations that are capable of holding a volume of water of up to 8 feet in

depth. Please confirm this. Please confirm that cable and pipe penetrations are also sealed to prevent leakage to adjacent spaces.

5) The staff notes that the four safeguard component areas contain numerous elevations and have the potential to hold a significant amount of water in the event that uncontrolled leakage occurs in the isolation valves on these lines. Did you postulate a situation where the volume of the RWSP is free to drain in to one of controlled leakage safeguards components areas?

    5(a) Would the height of the resulting volume of water exceed 8 feet, and spread via HVAC ductwork to adjacent spaces?