

## REQUEST FOR ADDITIONAL INFORMATION 748-5593 REVISION 2

4/28/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 06.02.05 - Combustible Gas Control in Containment  
Application Section: 6.2.5

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

06.02.05-42

Question No.: 6.2.5-42

Provide a more specific commitment to verify that the procured equipment identified as critical equipment in the Severe Accident Survivability Assessment is capable of withstanding the environmental conditions.

Provide further justification for the final list of equipment whose design specifications must consider the pressure, temperature and radiation conditions of a severe accident in their design specification and in particular, the pressure and temperature resulting from a hydrogen burn of an amount equal to that produced by a fuel clad-coolant reaction involving 100% of the fuel cladding surrounding the active fuel region.

The staff requested in RAI #635-4954 Question 06.02.05-39, that you clarify your statement made in RAI 551-4356 Question 06.02.05-37 response that the necessity of assessment of as-built key equipment is not necessary. The staff also requested you provide further justification for the final list of equipment whose design specifications must consider the pressure, temperature and radiation conditions of a severe accident in their design specification.

The staff has reviewed the response to RAI #635-4954 Question 06.02.05-39, and the following information is needed:

- 1) In regard to your response to RAI #635-4954 Question 06.02.05-39 Item #1: Please explain the sentences: "The COL applicant may not need to address SA survivability in procurement specifications used to purchase site-specific equipment. The plant designer is responsible to ensure that the capabilities of the systems and equipment procured for the US-APWR address the environmental conditions evaluated in the DCD"
  - a) Identify the specific process that will trigger type tests on the identified severe accident equipment such as igniters, pressure instrumentation. If it is the responsibility of the COL applicant to justify the use of prototypical studies to be representative of the procured equipment or to perform type tests for equipment that does not, please indicate the COL action item that specifies this action. If it is the plant designer that is responsible for such action, please provide more specific design basis equipment information that would justify the use of prototypical studies to represent procured equipment. Please note that 10 CFR 52.47 specifies that the DC application must contain a level of design information sufficient to enable the commission to judge the applicant's proposed means of assuring that construction conforms to the design and to reach a final conclusion on all safety question associated with the design before the certification is granted. This may require information normally contained in procurement

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- specifications be completed and available for audit if the information is necessary for the commission to make its safety determination.
- 2) Similarly for Question 06.02.05-39 Item 3b, the staff considers the action to update the PRA/SA to take into consideration site specific conditions and the action to validate the use of prototypical studies to justify use of procured equipment two separate actions. The staff is not confident that COL item 19.3(4) provides assurance that the COL applicant will justify that referenced prototypical studies are applicable to the procured equipment. Clarify the DCD to include a separate COL action for the COL applicant to validate the prototypical studies to the procured equipment or alternatively, provide more specific design basis information in the DCD that indicates that the procured equipment will have similar or better performance as that equipment described in the prototypical studies, such that there would be no need to validate prototypical studies to procured equipment.
  - 3) In regard to your response to RAI #635-4954 Question 06.02.05-39 Item # 2e: In your response to RAI 627-4926 Questions 19-449 and 19-454, you indicate that there is potential for hydrogen concentrations to exceed 10% by volume in the RWSP and there is a potential for detonation, and containment failure for some scenarios. You describe an accident management strategy where an operator would fill the RWSP with firewater to eliminate the potential. Please clarify why this action would not necessitate the inclusion of the RWSP water level instrument as necessary equipment to achieve safe shutdown and maintaining containment structural integrity as specified by 10 CFR Part 50, § 50.44(c)(3) and 10 CFR Part 50, § 50.34(f)(2)(ix)(c), alternatively, include design requirements for this instrument to survive the severe accident environment.
  - 4) In RAI 627-4926 Question 19-454 you describe manual operator action to inject firewater in to the containment to fill the RWSP in order to eliminate the potential for hydrogen accumulation in this subcompartment. Is hydrogen concentration monitoring in the RWSP now required to provide indication to operators that this action is required? If not, clarify how plant operators will be prompted to perform this action such that the threat of hydrogen detonation in this space is eliminated for all credible scenarios. Indicate or revise the COL item that is used to ensure that this described operator action be included in plant operating procedures.