

REQUEST FOR ADDITIONAL INFORMATION 433-3001 REVISION 0

7/30/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation
Application Section: 19.2.4

QUESTIONS for Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

19-390

Follow-up Question to RAI 19-291

Staff Requirements Memorandum to SECY 93-087 states, "use the following deterministic containment performance goal in the evaluation of the passive ALWRs as a complement to the conditional containment failure probability (CCFP) approach approved by the Commission in its SRM of June 26, 1990":

"The containment should maintain its role as a reliable, leak-tight barrier (for example, by ensuring that containments stresses do not exceed ASME Service Level C limits for metal containments, or Factored Load Category for concrete containments) for approximately 24 hours following the onset of core damage under the more likely severe accident challenges and, following this period, the containment should continue to provide a barrier against the uncontrolled release of fission products."

To address the above requirement, the staff requests the applicant to perform a appropriate analyses to demonstrate that the applicant's containment is designed to meet the deterministic acceptance criteria from the ASME Code under severe accident conditions within the containment as explained above. The evaluation has to consider all failure modes and their locations including various penetrations and discontinuities. The evaluation should also include material and geometric discontinuities and non-linearity as well as temperature dependency of materials on their mechanical properties under calculated pressure and temperature conditions appropriate for significant severe accident scenarios.