
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/29/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 858-6126 REVISION 3

SRP SECTION: 03.08.03 – Concrete and Steel Internal Structures of Steel or Concrete Containments

APPLICATION SECTION: 3.8.3

DATE OF RAI ISSUE: 10/25/2011

QUESTION NO. 03.08.03-47:

Section 2.1 of MHI TR 11013-P (R1) states that "While a 1/6th scale test was also performed to evaluate the thick primary shield walls, further study is required to assess their stiffness and strength." Explain what is meant by this statement, how and when this further study will be done, and how this information will be used in the analysis and design of the CIS. In addition, explain whether shrinkage and creep effects are considered in the design of the primary shield structure and how the large wall thicknesses were determined, i.e., for shielding requirements or for structural strength.

ANSWER:

This answer revises and replaces the previous MHI answer that was transmitted by letter UAP-HF-12051 (ML12075A108).

A benchmarking finite element (FE) analysis has been performed for the 1/6th scale test as part of Task 3 (MUAP-11013, Rev. 2, Section 5.0). A summary of this analysis is available in Technical Report MUAP-11013, Rev. 2, Section 8 of Appendix A.

Shrinkage and creep effects have been considered in the design of the primary shield structure. The effects of creep are included in the axial compression design strength as described in Sections 4.1 and 4.2 of Technical Report MUAP-11019, Rev. 1. The effects of shrinkage are included by eliminating the concrete contribution to the in-plane shear strength and the out-of-plane shear strength.

The primary shield wall thickness is determined from radiological shielding requirements.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Technical/Topical Report

There is no impact on the Technical/Topical Report.

This completes MHI's response to the NRC's question.