
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/29/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 905-6311 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: 01/25/2012

QUESTION NO. 03.08.03-71:

The Design Philosophy and Executive Summary of the MHI Technical Report (TR) MUAP-11019-P (R0), page viii, indicates that tie bars consist of two half-length pieces that are stud welded to the opposite steel faceplates, and the two half-length pieces are spliced in the center using a mechanical coupler. If the two half-length pieces of a tie bar will be welded to the opposite steel plates first, then spliced using a mechanical coupler, identify what tolerances need to be specified for the offset of the two half-length pieces of a tie bar. Explain how stresses in a tie bar due to the offset are evaluated and included in the design calculations. Since the tie bars will hold the two faceplates during the concrete pour, explain how the stresses in the tie bars and the faceplates due to the wet concrete are considered in the design of these structural elements. Explain how the assumption of the maximum wet concrete height that would be used to calculate additional stresses in the structural elements is ensured during the actual construction

ANSWER:

This answer revises and replaces the previous MHI answer that was transmitted by letter UAP-HF-12108 (ML12138A217).

The tie bar arrangement identified in Technical Report MUAP-11019, Rev. 0, is no longer planned for use in the US-APWR. As a result, the tolerance issues raised in this question are no longer applicable. The revised tie bar arrangement is discussed in Technical Report MUAP-11019, Rev.1, Section 2.8.

Technical Report MUAP-11019, Rev. 1, Section 8.7, details how demand/capacity utility ratios are limited to a maximum of 0.9 to account for secondary effects such as stresses imparted during concrete casting. In addition MUAP-12006, Rev. 0, Section 3.5.4.3.3.2 requires confirmation that the stresses are acceptable when applied in combinations with other appropriate SC structure loading conditions prior to placing the concrete.

Furthermore, construction guidance for concrete placement is provided in Technical Report MUAP-12006, Rev. 0, Section 3.5 along with the requirement that specific requirements be addressed in a future SC Structure Construction Plan.

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.