
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: Concrete and Steel Internal Structures of Steel or Concrete Containments

APPLICATION SECTION: 3.8.3

DATE OF RAI ISSUE: 01/25/2012

QUESTION NO. 03.08.03-79:

Explain/clarify the inconsistencies or typos in the MHI Technical Report MUAP-11019-P (R0) listed below.

1. Tests summarized in Table 2.2-1, on page 2-2, shows that steel plates are 6 mm with yield strength of 403 MPa, while page 2-4 shows values of 4.5 mm and 240 MPa.
 2. Page 2-9, equation 2.6-1, shows "0.39 ...>= 0.41" should be revised to "0.39 ...and >= 0.41"
 3. Page 6-4, third paragraph, the phrase "According to Section 11.5.6.2 of ACI 349..." should read "According to Section 11.5.7.2 of ACI 349 ..."
 4. Page 7-2, third paragraph, fourth line down, the phrase "... steel plate uniaxial tension strength ..." should read as "... steel plate uniaxial shear strength ..."
 5. Page 8-5, " $N_x = \dots = 0$ ", "=0" should be deleted, since this is a case with compression force, N_x .
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ANSWER:

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

The referenced tests used specimens with 3.2mm, 4.5mm, and 6mm plate thicknesses with varying yield strengths. Technical Report MUAP-11019, Rev. 1 discusses the behavior of specimens with 6mm-thick steel faceplates, and stated that this behavior was representative. The results were similar for other specimens, which were not included in the Technical Report. All local buckling results have now been included as Reference 15 in Appendix E of Technical Report MUAP-11005, Rev. 1.

In addition, the following editorial changes were made to Technical Report MUAP-11019, Rev. 1: Equation 2.6-1 has been revised with “and not less than”; the American Concrete Institute (ACI) reference has been corrected as suggested; the phrase “uniaxial tension strength” has been replaced with “yield strength”; and “ N_x ” has been removed from the equation “ $N_x = \dots = 0$ ” in Figure 8.4-1 (previously Figure 8.3-1 in Technical Report MUAP-11019, Rev. 0).

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.