
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

07/08/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 497-3734 REVISION 0
SRP SECTION: 03.08.04 – Other Seismic Category I Structures
APPLICATION SECTION: 3.8.4
DATE OF RAI ISSUE: 12/01/2009

QUESTION NO. 03.08.04-40:

In its response to Question 3.8.4-14, MHI states that the DCD will be revised to add horizontal cross section views of the RIB and PSIB shear walls to the vertical cross section views currently shown in the DCD.

The applicant is requested to provide the following information:

1. In its review the staff notices that in Figure 3.8.4-13 in the MHI's response to this question, the horizontal cross section for zone 1 (EL-26'-4" to EL-14'-2") shows shear reinforcement (stirrups) is provided. This suggests that the shear stresses are high in this area. Are boundary elements used in this area? If yes, the applicant is requested to provide the re-bar layout for the boundary elements. If not, provide the rationale for not using the boundary elements.

The staff also notices that the vertical cross section shown in Figure 3.8.4-13 in the response does not match the description given in Table 3.8.4-9 of the MHI's answer to Question 3.8.4-13 of this RAI. For example, zone 1 in Figure 3.8.4-13 is in the range of EL-26'-4" to EL-14'-2"; whereas in Table 3.8.4-9 it is from EL 3'-7" to EL 25'-3". The applicant is requested to clarify this discrepancy.

Reference: MHI response to RAI 342-2000, dated 7/3/2009, MHI Ref: UAP-HF-09360, ML091900558.

ANSWER:

This response replaces the previous response submitted via MHI letter UAP-HF-10047, dated February 19, 2010 (ML100550204).

Boundary elements are not utilized since they are not required per American Concrete Institute (ACI) 349-06 Section 21.7.6.1, where the aspect ratio h/l is less than 2.0. Such is the case of the wall shown in Design Control Document (DCD) Revision 3 Figure 3.8.4-13. The shear reinforcement (stirrups) is there to resist higher out-of-plane shear forces but does not make it a boundary element.

DCD Revision 3 Table 3.8.4-9 gives the reinforcement provided for the South External Wall Section 4 of the Reactor Building (R/B), not the West Power Source Building (PS/B) which is shown in Table 3.8.4-12 and Figure 3.8.4-13.

Table 3.8.4-9 and Figure 3.8.4-13 contain information for typical reinforcement in different locations. The Table-Figure relationships for Table 3.8.4-9 and Figure 3.8.4-13 are as follows:

- DCD Revision 3 Table 3.8.4-9 corresponds to Figure 3.8.4-7 (Typical Reinforcement in South Exterior Wall – Section 4)
- DCD Revision 3 Table 3.8.4-12 corresponds to Figure 3.8.4-13 (Typical Reinforcement in West PS/B South Exterior Wall – Section 1)

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-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.