

REQUEST FOR ADDITIONAL INFORMATION 404-3063 REVISION 0

6/18/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 14.03.03 - Piping Systems and Components - Inspections, Tests, Analyses, and
Acceptance Criteria
Application Section: Tier 1, Chapter 2

QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

14.03.03-17

This is the supplemental RAI to RAI 242-2153, Question 14.03.03-01

In its letter dated April 27, 2009, MHI indicated in the response of RAI 14.03.03-01 that the requirements of RG 1.207 Rev. 1 concerning environmental impact on fatigue of ASME Code Section III Class 1 piping will be followed. However, the applicant decided not to include the reference to RG 1.207 in the Tier 1, Table 2.3-2, ITAAC item 1. The staff believes referencing RG 1.207, in addition to ASME Code Section III requirements, is essential to provide the complete scope of Class 1 piping ITAAC. Thus, the staff requests the applicant to modify the ITAAC such that requirements of the ASME Code Section III and RG 1.207 will be met.

14.03.03-18

This is the supplemental RAI to RAI 242-2153, Question 14.03.03-02

In the response to RAI 14.03.03-02, MHI discussed a graded approach to the engineering schedule for the design of Class 2 or 3 piping systems and components (PSC) contained in MHI's letter UAP-HF-08123 (dated July 14, 2008). The staff found that this graded approach is acceptable to resolve a portion of the design of Class 2 or 3 PSC. However, it should be noted that the ITAAC Item 3 in Tier 1, Table 2.3.2, is not established for this graded approach. Rather, the scope of the ITAAC should encompass all Class 2 or 3 PSC design as indicated in SRP 14.3.3. The design completion of representative Class 2 or 3 PSC as outlined in UAP-HF-08123 will satisfy a portion of ITAAC item 3 of Table 2.3.2. When all the Class 2 or 3 PSC design reports are available for NRC staff audit, the remaining portion of the ITAAC Item 3 can be satisfied. The staff does not consider the design of representative of Class 2 or 3 PSC to constitute the complete design of all Class 2 or 3 PSC. The staff requests the applicant to modify the ITAAC Item 3 of Tier 1 Table 2.3-2 to reflect that all Class 2 or 3 piping systems and components design will meet the requirements of the ASME Code Section III.

14.03.03-19

This is the supplemental RAI to RAI 242-2153, Question 14.03.03-03

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In its letter dated April 27, 2009, MHI responded to RAI 14.03.03-03 by revising the ITAAC. In Items 1 and 3 in Tier 1 Table 2.3-2, MHI modified the Acceptance Criteria (AC) to include ASME Code III design reports.

a) The staff has two concerns with the modified AC. First, SRP 14.3.3 indicates that an acceptable version of an ASME Code certified stress report is the design document required by ASME Code Section III, Subarticle NCA-3550. Second, for clarification, the subject (ASME Code Section III Class 1) of the sentence was omitted in the AC. The staff requests the applicant to modify the AC to state that the “ASME Code certified Design Report(s) (NCA-3550) (certified, when required by ASME Code) exist and conclude that ASME Code Section III Class 1 piping systems and components comply with the requirements of ASME Code Section III”.

b) In the Inspections, Tests, and Analyses (ITA), the staff found that an analysis of the piping systems and components is not appropriate. Rather, the ITA should involve the inspection of ASME Code certified Design Reports (NCA-3550) and required documents. The staff requested the applicant to make appropriate change to the ITA to reflect that an inspection will be conducted.

This question is also applicable to Item 3 in Table 2.3-2 of Tier 1.

14.03.03-20

Components ITAAC

This is the supplemental RAI to RAI 242-2153, Question 14.03.03-05

In its letter dated April 27, 2009, MHI responded to RAI 14.03.03-05 by revising the ITAAC in Tier 1, Table 2.4.1-2 item 5a and 5b to account for two activities, fabrication & installation, and as-built reconciliation respectively. The staff found that there is only one “Design Commitment” when there are two sub-entries (5a and 5b) for “Inspections, Tests, Analyses” (ITA) and “Acceptance Criteria” (AC). To enhance the inspectibility of ITAAC, the staff requests the applicant to separate the “Design Commitment” into 5a and 5b such that there are two distinct commitments demonstrating that the components i) are fabricated, installed, and inspected in accordance with ASME Code Section III requirements and ii) shall be reconciled with design requirements.

(a) Fabrication and Installation: In Item 5a in Tier 1 Table 2.4.1-2, MHI modified the AC to include ASME Code Section III data reports. To avoid ambiguity, the staff requests the applicant to modify the AC to “ASME Code Data Report(s) (certified, when required by ASME Code) and inspection reports (including N-5 Data Reports where applicable) exist and conclude.....”

(b) As-built reconciliation: In Item 5b in Tier 1 Table 2.4.1-2, MHI revised the AC to include ASME Code Section III design reports. Three minor modifications should be made to clarify the statements in ITA and AC: (i) revise the ITA statement to “A reconciliation analysis of the components using as-designed and as-built information and ASME Code certified Design Report (NCA-3550) will be performed; (ii) modify the AC to “ASME Code Section III Design Report(s) (certified, when required by ASME Code) exist

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and conclude.....” and (iii) append the statement “The report documents the results of the reconciliation analysis” to the end of the AC.

These two questions are also applicable to Tier 1, Sections 2.4.2, 2.4.4, 2.4.5, 2.4.6, 2.7.1.2, 2.7.1.9, 2.7.1.10, 2.7.1.11, 2.7.3.1, 2.7.3.3, 2.7.3.5, 2.7.6.3, 2.7.6.7, 2.7.6.8, 2.11.2, and 2.11.3

14.03.03-21

Piping ITAAC

This is the supplemental RAI to RAI 242-2153, Question 14.03.03-06

In its letter dated April 27, 2009, MHI responded to RAI 14.03.03-06 by revising the ITAAC in Tier 1, Table 2.4.2-5 item 4.b.i and 4.b.ii to account for two activities, fabrication & installation, and as-built reconciliation. The staff found that there is only one “Design Commitment” when there are two sub-entries (4.b.i and 4.b.ii) for “Inspections, Tests, Analyses” (ITA) and “Acceptance Criteria” (AC) respectively. To enhance the inspectibility of ITAAC, the staff request the applicant to separate the “Design Commitment” into 4.b.i and 4.b.ii such that there are distinct commitments demonstrating that the piping of the RCS, including supports i) are fabricated, installed, and inspected in accordance with ASME Code Section III requirements and ii) shall be reconciled with design requirements.

In the “Design Commitment” column, the term “piping of the RCS, including supports” are used. The same terminology should be used consistently in the ITA and AC also. Thus, the staff requests the applicant to modify ITA and AC to use the term “piping of the RCS, including supports”.

(a) Fabrication and Installation: In Item 4.b.i in Tier 1 Table 2.4.2-5, MHI modified the AC to include ASME Code Section III data reports. To avoid ambiguity, the staff requests the applicant to modify the AC to “ASME Code Data Report(s) (certified, when required by ASME Code) and inspection reports (including N-5 Data Reports where applicable) exist and conclude.....”

(b) As-built reconciliation: In Item 4.b.ii in Tier 1 Table 2.4.2-5, MHI revised the AC to include ASME Code Section III design reports. Three minor modifications should be made to clarify the statements in ITA and AC: (i) revise the ITA statement to “A reconciliation analysis of the piping system of the RCS, including supports, using as-designed and as-built information and ASME Code certified Design Report (NCA-3550) will be performed; (ii) modify the AC to “ASME Code Section III Design Report(s) (certified, when required by ASME Code) exist and conclude.....” and (iii) append the statement “The report documents the results of the reconciliation analysis” to the end of the AC.

These two questions are also applicable to Tier 1, Sections 2.4.4, 2.4.5, 2.4.6, 2.7.1.2, 2.7.1.9, 2.7.1.10, 2.7.1.11, 2.7.3.1, 2.7.3.3, 2.7.3.5, 2.7.6.3, 2.7.6.7, 2.11.2, and 2.11.3

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14.03.03-22

This is the supplemental RAI to RAI 242-2153, Question 14.03.03-11

In its letter dated April 27, 2009 responding to NRC RAI 14.03.03-11, MHI indicated that the Main Control Room (MCR) air handling unit cooling coils of the MCR HVAC System are the only ASME Code Section III piping. The cooling coils are cooled by the Essential Chilled Water Systems (ECWS) and details of the design, construction, and testing requirements of the cooling coils are contained Section 2.7.3.5 of ECWS. The applicant proposed two changes to address the staff concerns. First, the design description of the MCR HVAC System (2.7.5.1) will be revised to indicate that the cooling coils are the only system and components designed and constructed to ASME Code Section III requirements. Second, the ITAAC of Sections 2.7.5.1 will cross-reference the ITAAC in Section 2.7.3.5 of ECWS. These two changes will also be used for other cooling coils that are designated as ASME Code Section III in RAI 14.03.03-11. It should be noted that in the response, the applicant referred the cooling coils as piping in Section 2.7.3.5 while those same cooling coils were referred as components in the design description in 2.7.5.1.

The provided resolution is acceptable to the staff except that the corresponding changes in Section 2.7.3.5 are lacking. The aforementioned MCR air handling unit cooling coils are not listed as ASME Code Section III in Table 2.7.3.5-2 or Table 2.7.3.5-3. The staff requests i) the applicant to clarify whether the cooling coils should be treated as components or piping; and ii) the applicant to include in Table 2.7.3.5-2 or Table 2.7.3.5-3 the MCR air handling unit cooling coils and other cooling coils mentioned in RAI 14.03.03-11.