REQUEST FOR ADDITIONAL INFORMATION 847-6064 REVISION 3

10/20/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 03.09.03 - ASME Code Class 1, 2, and 3 Components
Application Section: Section 3.9.3

QUESTIONS for Engineering Mechanics Branch 1 (AP1000/EPR Projects) (EMB1)

03.09.03-27

This RAI is a supplemental RAI of RAI 209, Question 03.09.03-5:
The identification of individual loads and the appropriate combination of these loads (i.e., sustained loads, loads due to system operating transients (SOT), OBE, SSE, LOCA, DBPB, MS/FWPB and their dynamic effects) are following the SRP Section 3.9.3, subsection 1.3 guidance. The appropriate method of combination of these loads is provided in NUREG-0484, "Methodology for Combining Dynamic Loads."
In DCD Tier 2 Section 3.9.3, Table 3.9-3 and 3.9.3-4, Rev. 3, MHI has the load combinations for components and component supports associated with ASME Service Levels A, B, C and D. The load combinations of dynamic loads in Level D Service have not demonstrated the methodology used of NUREG-0484. The staff requests MHI to provide additional clarification and justification for the third and fourth load combination lines of Level D Service Tables 3.9-3 and 3.9-4, as follows:
DCD Tier 2, Section 3.9.3, Table 3.9-3, Level D Service, 3rd and 4th lines

- 3rd load combination line: Not clear why SRSS is used for SSEI and SSEA. They should be combined absolute sum as in all other load combination lines. Clarify this discrepancy.

- 4th load combination line: SRSS is used for (SSEI+SSEA), DBPB, and LDF load combinations. No justification is given as to why this is acceptable except note 8 states that the timing sequence and initiating conditions that occur between PM, LDF and LEM are considered. Please clarify what this means and provide justifications for using SRSS for these dynamic loads.

DCD Tier 2, Section 3.9.3, Table 3.9-4, Level D Service, 3rd and 4th lines

- 3rd load combination line: Not clear why SRSS is used for DBPB, (SSEI + SSEA + SE). First, SRSS for LOCA and SSE load combinations must be established using guidance given in NUREG-0484. Second, note 6 should be for the combination of (SSEI + SSEA + SE), not the SRSS for DBPB and (SSEI + SSEA + SE). Clarify the discrepancy.

- 4th load combination line: SRSS is used for (SSEI+SSEA), DBPB, and LDFF load combinations. No justification is given why this is acceptable except note 7 states that the timing sequence and initiating conditions that occur among THi

and LDFF are considered. Please clarify what this means and provide justifications for using SRSS for these dynamic loads.