

REQUEST FOR ADDITIONAL INFORMATION 273-2239 REVISION 0

3/11/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 03.13 - Threaded Fasteners - ASME Code Class 1, 2, and 3
Application Section: 3.13

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects)
(CIB1)

03.13-1

The ASME Code, Section III provides acceptance criteria for magnetic-particle and liquid-penetrant examinations in Subsections NB-2583.3 and NB-2584.3, respectively. In Tier 2, Section 3.13.1.3 of the US-APWR Design Control Document, under the section titled "Required Examinations," the applicant states the acceptance criteria for magnetic-particle and liquid-penetrant examinations as, "... the ASME Code specifies that all nonlinear, nonaxial indications are unacceptable, regardless of length." However, NB-2583.3 and NB-2584.3 both state that "linear", not "nonlinear" nonaxial indications are unacceptable. The applicant is requested to address this discrepancy.

03.13-2

Tier 2, Table 3.13-1 of the US-APWR Design Control Document entitled, "ASME Code, Section III Criteria for Selection and Testing of Bolting Materials," lists NB-2224.3 as the ASME Code, Class 1 criterion for test coupons requirements bolting/stud materials. However, Subsection NB-2444 of the ASME Code contains the ASME Code, Class 1 criteria for test coupons requirements bolting/stud materials. The applicant is requested to address this discrepancy.

03.13-3

Tier 2, Section 3.13.1.3 of the US-APWR Design Control Document titled "Fracture Toughness Requirements for Threaded Fasteners Made of Ferritic Materials" contains fracture toughness requirements for Class 1, 2 and 3 fasteners. In the "acceptance standard" section, the applicant states "In NC-2333 and ND-2333 for bolting material, the Cv tests are performed at or below the lowest service temperature, and all three specimens shall meet the requirements of Table NC-2332.3-1 and Table ND-2333-1, respectively." However, Subsection NC-2332.3 of the ASME Code (not NC-2333) contains the Cv test criteria for ASME Class 2 fasteners. The applicant is requested to address this discrepancy.

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03.13-4

Tier 2, Section 3.13.1.1.1 of the US-APWR Design Control Document entitled, "Class 1 Applications," references Tier 2, Subsection 5.3.1.7 for the specific criteria applicable to reactor vessel fasteners. In this section, the applicant specifies the Brinell hardness for reactor vessel fasteners to be 302 HB (minimum) to 311 HB (maximum). The applicant is requested to provide the basis for these hardness values.

03.13-5

Tier 2, Subsection 3.13.1.2.5 of the US-APWR Design Control Document references (3.13-10) ANSI N45.2.1, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants," for cleaning and cleanliness controls of threaded fasteners. For cleaning and cleanliness controls of components (including threaded fasteners), the NRC currently references the use of Regulator Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants," dated March 2007 (ref. 3.13-9) which endorses ASME NQA-1-1994, Part II, Subpart 2.1. NRC requests the applicant to use the guidance contained in RG 1.37 and ASME NQA-1-1994 for cleaning and cleanliness controls of threaded fasteners.