REQUEST FOR ADDITIONAL INFORMATION 502-3979 REVISION 2

12/1/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 04.05.02 - Reactor Internal and Core Support Structure Materials
Application Section: 4.5.2

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

04.05.02-17

In its response to US-APWR DCD RAI 414-3102 Question 04.05-11, MHI discusses welding of the radial supports to the reactor vessel. However, additional information is needed to ensure compliance with 10CFR 50 Appendix A General Design Criterion (GDC) 31 as it relates to the reactor coolant pressure boundary behaving in a nonbrittle manner.

What controls (e.g. weld heat input limits, post weld heat treatments) will be imposed during the manufacturing process to ensure that welding of the radial supports to the reactor vessel does not embrittle the reactor vessel?

Will the reactor vessel be heat-treated after welding of the radial supports?

04.05.02-18

In its response to US-APWR DCD RAI 414-3102 Question 04.05.02-13, MHI stated that the electron-beam welding process is used for the core-barrel welding, and that this welding is performed without adding weld materials. The staff needs additional information to determine compliance with GDC 1 as it relates to structures, systems, and components being designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with its importance to safety.

Please specify the codes and standards that will be used to qualify the welding procedures and welders/welding operators for the core-barrel welds?

04.05.02-19

In its response to US-APWR DCD RAI 414-3102 Question 04.05.02-7, MHI stated that the potential for IASCC in the neutron reflector is less than that in the core-baffle structures in existing PWRs, and that in-service inspections based on ASME Code, Section XI requirements are sufficient to assure integrity of the neutron reflector. Please provide the technical bases for concluding that the effects of IASCC in the US-APWR neutron reflector will be less than that found in core-baffle structures in existing PWRs

and are, thus, not significant. Discuss specific examples of operating experience in the U.S., Japan or other countries that support this statement.

04.05.02-20

In response to US-APWR DCD RAI 414-3102 Question 04.05.02-14, MHI stated that the potential for IASCC in the core barrel is less than that found in existing PWRs, and that in-service inspections based on ASME Code, Section XI requirements are sufficient to assure integrity of the core barrel. Similar to the previous supplemental RAI on the US-APWR neutron reflector, please discuss the technical basis for determining that there will be no adverse effects of IASCC on the core barrel. Discuss any operating experience in the U.S., Japan or other countries that support this statement.