REQUEST FOR ADDITIONAL INFORMATION 616-4865 REVISION 0

8/13/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 09.01.05 - Overhead Heavy Load Handling Systems
Application Section: 9.1.5

QUESTIONS for Balance of Plant Branch 1 (SBPA)

09.01.05-18

GDC 2 and GDC 4 require Overhead Heavy Load Handling Systems (OHLHS) to be designed with the ability to withstand the effects of an earthquake and effects of a dropped load. NUREG-0612 and SRP Section 9.1.5.III.4 provide guidance for ensuring the OHLHS is designed to be a highly reliable load handling system or demonstrate by analysis that the potential consequence of a dropped load is acceptably low.

In RAI 9.1.5-01, the NRC staff requested the applicant to provide details (i.e. single failure-proof, loads, location, seismic category, etc.) for the OHLHS cranes located in areas throughout the plant where any load drop could result in damage to SSCs important to safety. In the response to RAI 9.1.5-01, the applicant clarified that, except for the polar crane and spent fuel cask handling crane, the cranes and hoists listed in Table 9.1.5-3 are not designed as single failure-proof.

Based on the staff's review of the applicant’s RAI response, the applicant provided sufficient justification for the use of non-single failure-proof cranes, with the exception of the use of Hatch Hoist. In response to RAI 9.1.5-01, Table 9.1.5-3 was revised to include the Equipment Hatch Hoist as equipment that is located over Safe Shutdown Equipment (SSE). However, the RAI-response did not specify which SSE would be located beneath the Hatch Hoist. Furthermore, the RAI-response indicated that the use of the Hatch Hoist would be controlled by heavy load handling procedures. If use of procedures is the applicant's only credited method to justify not handling loads when a postulated load drop could result in unacceptable consequences (since the Hatch Hoist is purported to handle critical loads over SSEs), this does not sufficiently meet the guidance of SRP 9.1.5.III.4.

Therefore, the applicant is requested to provide the following information:

- Idenfification of the SSEs located beneath the Hatch Hoist that could be impacted by a potential load drop from the Equipment Hatch Hoist.

- Justifiction for how the SRP 9.1.5.III.4 guidance would be met for Equipment Hatch Hoist.

Reference: MHI's Responses to US-APWR DCD RAI No. 292-2232; MHI Ref: UAP-HF-09260; dated May 25, 2009; ML091490219.

09.01.05-19

In RAI 09.01.05-16 (RAI 563-4386), the applicant was asked in to clarify which portions of the cranes (i.e. hooks, hoists, etc.) are designed with single failure-proof feature. In addition, the staff asked for clarification with the use of the term “hooks” and “hoists”.

It its response to RAI 09.01.05-16, the applicant clarified that DCD will be revised to identify that the main hoisting systems are designed to conform to single failure-proof criteria. Hoisting systems consist of the reeving, hoisting mechanisms, and hooks used on a crane.

The applicant’s RAI 09.01.05-16 response addressed the non-single failure-proof auxiliary hoist on the spent fuel cask handling crane, based on its inability to travel over the SFP. The auxiliary hoist on the spent fuel cask handling crane cannot physically travel over the SFP, which limits this non-single failure-proof hoist potential to drop into the SFP. However, the auxiliary hoist on the polar crane is capable of traveling over the reactor vessel. The US-APWR contains two hoists on the polar crane (main and auxiliary crane) and only the main hoist is single failure-proof. The auxiliary hoist on the polar crane is non-single failure-proof and has a 50-ton capacity. Based on the RAI response, the polar crane auxiliary hoist does not contain any travel limitations to disallow travel over the reactor vessel, except by use of administrative procedures. As stated in DCD, the polar auxiliary hoist is more for reactor coolant pump motors and other similarly sized equipment and specified as not utilized for carrying critical loads.

However, carrying any load over the reactor vessel would render such action to regarded as handling a critical load. The applicant appears to take credit only for the auxiliary hoist not carrying critical loads and ensuring that by the use of administrative procedures. The use of administrative procedures alone does not meet the guidance of SRP 9.1.5 (III.4) for non-single failure proof-cranes. Therefore, the applicant is requested to justify how the SRP 9.1.5 (III.4) guidance is met for the non-single failure-proof hoist on the polar crane. The guidance provides several possible solutions to address this need: upgrade the non-single failure-proof hoist to single failure-proof hoist, provide a keyed interlock preventing use of the standard hoist and administratively control release of the key, provide a load drop consequence analysis.

Reference: MHI's Responses to US-APWR DCD RAI No. 563-4386; MHI Ref: UAP-HF-10171; dated June 15, 2010; ML101680364.