
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

08/01/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 1044-7140 REVISION 3
SRP SECTION: 03.08.04 – Other Seismic Category I Structures
APPLICATION SECTION: 3.8.4
DATE OF RAI ISSUE: 07/08/2013

QUESTION NO. 03.08.04-55:

On April 3, 2013, the applicant submitted a markup of DCD Tier 2 Section 3.8 to provide updated information related to a seismic design change.

In Subsection 3.8.4.4.1, "R/B [reactor building]," the second paragraph (page 3.8-75) states, "The fuel handling area is a reinforced concrete structure supported by structural steel framing. The new fuel is stored in racks in a dry, unlined pit. The spent fuel pit is lined with stainless steel and is normally flooded to an elevation 1 ft, 2 in. below the operating floor deck."

The applicant is requested to provide figures depicting the design for the areas of the fuel handling, the new and spent fuel storages, and the structural steel framing supporting system to the areas; and describe how the loads from these areas are transferred down to the basemat during an earthquake.

ANSWER:

Loads were applied to the fuel handling area pits in the ANSYS model in two ways: (1) loads from water, and (2) loads from equipment. The water weight in the pits was applied to slabs using MASS21 elements. Static and Dynamic pressure from the water was applied to the surrounding walls of each pit. Loads from equipment inside the pits were applied by changing the density of the slab elements in the locations of those pieces of equipment. These loads include pumps, fuel storage racks (new fuel, damaged fuel, and spent fuel), structural steel to support fuel racks, spent fuel, damaged fuel, damaged fuel container, fuel transfer system, new fuel elevator, and pit gates. Figure 1 shows the layout of the fuel handling area pits in the ANSYS model.

Loads from the fuel handling area pits are transferred from the slabs to the connected shear walls. These shear walls carry the load down to the basemat during a seismic event.

The steel racks in the fuel handling area pits are made up of several individual steel framing racks. These racks have yet to be designed and will be designed in the detailed design phase. In the ANSYS model, an evenly distributed load was applied over the slab area

where all the individual steel framing racks reside. Overall seismic behavior of the several individual steel racks residing in each pit is assumed to be similar.

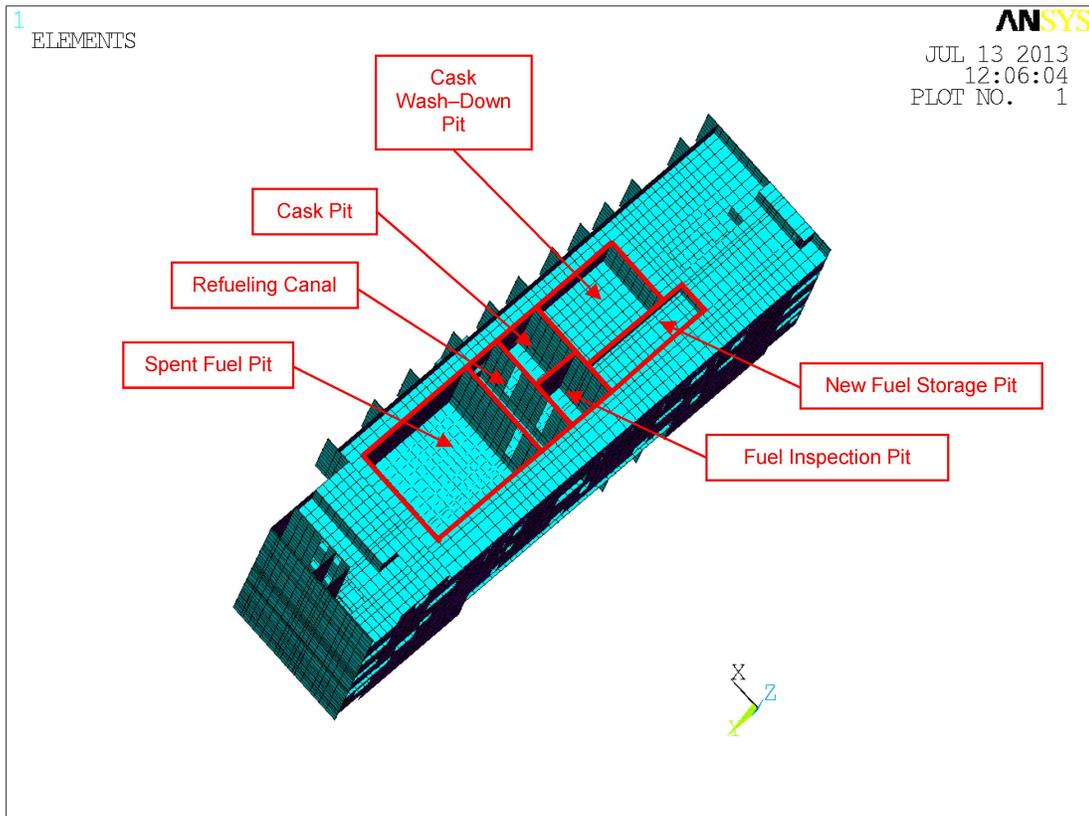


Figure 1. Fuel Handling Area Pits

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Technical/Topical Report

There is no impact on the Technical/Topical Report.

This completes MHI's response to the NRC's question.