

REQUEST FOR ADDITIONAL INFORMATION 621-4947 REVISION 2

8/30/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 19.01 - Determining the Technical Adequacy of Probabilistic Risk Assessment Results for
Risk-Informed
Application Section: 19

QUESTIONS for PRA and Severe Accidents Branch (SPRA)

19.01-2

During the staff audit of the shutdown PRA on July 8, 2010, the staff learned that POS 6 has fuel in the reactor vessel. The staff requests MHI to update Section 19.1.6.1 of the DCD and the shutdown PRA to state that fuel is in the reactor vessel during POS 6, which is currently defined as not having fuel in the reactor vessel.

19.01-3

During the staff audit of the shutdown PRA on July 8, 2010, the NRC staff needed clarification on how the RCS was drained to midloop conditions starting in POS 4-1. The staff requests MHI to update Section 19.1.6.1 of the DCD and the shutdown PRA to (1) state the size of the pressurizer vent which is open to initiate RCS draining in POS 4-1 and (2) include a description of how the pressurizer and RCS is drained in POS 4-1 to reach midloop conditions prior to refueling.

19.01-4

Based on the NRC staff audit of the shutdown PRA on July 8, 2010, the staff requests the applicant to document in Section 19.1.6.1 of the DCD and the shutdown PRA whether gravity injection can be credited in POS 8-1 and 8-2 (midloop following refueling), since a safety valve is removed. If gravity injection can be credited, please explain why.

19.01-5

During the NRC staff audit of the shutdown PRA on July 8, 2010, the staff learned that the applicant plans to refill the RCS using vacuum refill in POS 8-3. The staff requests MHI to update Section 19.1.6.1 of the DCD and the shutdown PRA for internal and external events to state that the applicant plans to refill the RCS using vacuum refill in POS 8-3. The applicant needs to summarize this process in the shutdown PRA and the

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DCD, including (1) how the RCS will be configured for vacuum refill and (2) how the RCS will be configured if the RHR function is lost.

19.01-6

As discussed at the NRC staff audit of the shutdown PRA on July 8, 2010, the staff is requesting MHI to update Section 19.1.6.1 of the DCD and the shutdown PRA to include the revised times for RCS boiling and the revised time to core damage assuming an extended loss of the RHR function for POSs 4-1, 4-2, 4-3, 8-1, 8-2, and 8-3 given that POS 4 and POS 8 will be redefined in response to RAI 19-441.

19.01-7

As discussed at the NRC staff audit of the shutdown PRA on July 8, 2010, the staff requests MHI to update the shutdown PRA and the DCD to provide a discussion on how the min-max seismic margins approach was applied to shutdown. The staff is requesting the applicant to update the shutdown PRA to include the seismic cutsets and the sequence HCLPF capacities using the min-max method. The staff also requests MHI to update the shutdown PRA to include the dominant mixed cutsets containing seismic failures and random failures.