7/20/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation
Application Section: 19

QUESTIONS for PRA and Severe Accidents Branch (SPRA)

19-441

The staff has found that two plant operational states (POSs) were missing from the POS evaluation in Section 20.1.2 of the PRA and page 19-103 of the US-APWR DCD. The staff does not have enough information to conclude that POS 8-1, midloop after refueling, is bounding for the low power/shutdown (LPSD) PRA. These two plant POSs include:

(1) the RCS starts at midloop and is filled for refueling. This POS includes reactor vessel head removal. When the reactor vessel head is removed, the RCS water level is typically a foot below the reactor vessel flange. Since this plant operational state occurs before refueling, the time to RCS boiling can be under thirty minutes in operating plants.

(2) the RCS is initially filled and is drained to midloop conditions after refueling. This POS includes reactor vessel head installation. When the vessel head is installed, the RCS water level is typically a foot below the reactor vessel flange resulting in reduced times to RCS boiling.

The staff is requesting MHI to quantitatively assess these POSs separately, or justify why these POSs are bounded by POS 8-1. If these two POSs are bounded by POS 8-1:

(1) the duration of time in these POSs should be added to POS 8-1.
(2) the duration of time in these POSs should be included in each initiating event frequency calculation for POS 8-1 which includes internal events, fires, and floods.