

REQUEST FOR ADDITIONAL INFORMATION 331-935 REVISION 0

4/13/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 06.02.01 - Containment Functional Design

Application Section: SRP 6.2.1

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

06.02.01-7

In DCD Section 6.2.1.1.1, Mitsubishi notes that Table 6.2.1-1 “summarizes containment temperature and pressure, for a broad range of postulated breaks”, yet this table only has one break included. Please, revise either the table to include additional breaks, or the table description in the text.

06.02.01-8

Please, provide design details on how the drain paths are accounted for in the analysis, ie., the split between retained and returned water, and the timing of the water being returned, and the assumptions used in determining these values.

06.02.01-9

The RWSP is assumed to be a pool at the bottom of containment, with “appropriate assumptions on the heat and mass transfer at the pool.” The staff cannot locate the details of these assumptions and sensitivities to these assumptions in the DCD. Please, provide a reference for the details of these assumptions, including its basis and sensitivity of the results to these assumptions.

06.02.01-10

Please, provide sufficient information for the staff to develop an independent containment model for confirmatory calculation, including the GOTHIC input model.

06.02.01-11

Provide details of the GOTHIC heat structures modeling, including what materials were lumped together as described in the DCD. In addition, provide an assessment of the calculation error associated with the adopted analytical approach.

REQUEST FOR ADDITIONAL INFORMATION 331-935 REVISION 0

06.02.01-12

Justify the selection of the 0.99 mm (0.039 inch) spray droplet diameter used in the GOTHIC model. Provide any sensitivity of calculated pressure and temperature to this diameter

06.02.01-13

A statement is made that since evaporation rates are reasonably predicted by GOTHIC models, condensation rates should be as well. Please justify this statement, including justification of the droplet condensation coefficients used in this analysis and sensitivity to this parameter.

06.02.01-14

The containment design temperature limit seems to be 148.9°C (300°F). However, there are periods of time during the postulated MSLB accident that the calculated atmospheric temperature exceeds this limit. Please, confirm if the 148.9°C (300°F) temperature is the design limit, and if so, discuss the periods of time the containment temperatures exceeds this limit and its potential adverse effects on containment structures and equipment.

06.02.01-15

RAI M-3.2-1 in the review of MUAP-07031 report requested expanding Table 3-1 in that document. Since Table 6.2.1-17 in the DCD is the same table, please revise the DCD table.

06.02.01-16

In section 6.2.1.3, multiple energy sources were accounted for in the Mitsubishi mass and energy release analysis. Mitsubishi states that conservative assumptions were made in calculating the available energy. Please, justify and/or discuss the basis for these assumptions.

06.02.01-17

Provide all of the LOCA and MSIV DBA long term calculations to determine the containment pressure at 24 hours into the accident.