

Supplemental RAI Request for RAI 6.2-61

6.2-61 The objective of RAI 6.2-61 is to obtain detailed information on the licensing design basis accident (DBA) containment calculation performed by General Electric (GE). This will enable the NRC to resolve any notable differences between GE's licensing calculations and NRC's audit calculations for the DBA peak containment pressure. The information provided in GE's response to RAI 6.2-61 (MFN-06-364 dated October 3, 2006) did not provide enough detail. Please provide additional supplemental information as follows:

It is recognized that the DBA containment calculations can be segmented into three phases: (1) blowdown, (2) gravity driven cooling system (GDACS) draindown and recovery, and (3) long-term. For purposes of providing results with reasonable resolution for each accident phase, provide the data requested in the time period ranges appropriate; for example, blowdown (0 to 500 seconds), GDACS draindown and recovery (0 to 50000 seconds), and long-term (0 to 72 hours).

Provide all mass and energy sources from the reactor pressure vessel (RPV) and balance of plant (BOP) in the above time ranges. These sources (both steam and liquid) will allow the NRC to assess to what extent differences noted between GE and NRC audit calculations are the result of variation in primary system or BOP modeling.

It has been recognized that variations in noncondensable gas transfers between the drywell and wetwell can have a significant impact on the peak pressure calculated for the ESBWR containment DBA licensing calculations. In order to understand differences in noncondensable gas transfers between GE licensing and NRC audit calculations, it is necessary to obtain data on the GE noncondensable gas distributions within the time ranges given above. Since noncondensable gas masses are not an explicit output of the TRACG code, other parameters are being requested to facilitate the calculation of gas mass distribution. For example, in order to determine the code's calculated drywell and wetwell gas distributions, the TRACG nodalization of the regions must be known in detail. This can be accomplished by providing a nodalization diagram of the TRACG cells with corresponding reference numbers, and associated with each cell number (drywell/wetwell) the cell gas space volume and liquid volume (i.e., free volume and void time history) for the time ranges given above. In addition, for the same cell numbers local temperature, partial pressures of air and steam should also be provided.

Provide the transient data in graphical and tabular formats. The tabular data should be transmitted as EXCEL worksheets to facilitate further manipulations to recover meaningful comparison results. In the case of the mass and energy sources and local parameters, transient tabular data should be provided with appropriate time resolution for each time period range. Mass and energy sources should be given both as rates and integral quantities.