
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 56-7996
SRP Section: 06.02.02 - Containment Heat Removal Systems
Application Section: 6.2.2
Date of RAI Issue: 07/01/2015

Question No. 06.02.02-11

DCD Tier 2, Section 6.8.2.2.1 states that, following an accident, water introduced into containment drains to the hold-up volume tank (HVT). Any debris in the containment could be transported to the HVT with this fluid. Debris greater than 3.81 cm (1.5 in) in diameter is prevented from entering the HVT by a vertical trash rack at the entrance to the HVT. Particles that are smaller than the trash rack mesh enter the HVT. RG 1.82, Revision 4, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," Section 1.3.9.2 states that licensees (or applicants) should compute structural loads on a strainer using the maximum pressure drop across the strainer. The evaluation addresses the limiting conditions corresponding to the break location and debris source term that induce the maximum total head loss at the ECCS strainer. The NRC staff requests that the applicant provide the discussion of the structural loads, analysis methodology, and total differential pressure (ΔP in psi) across the trash racks with and without latent debris greater than 3.81 cm (1.5 in) in diameter.

Response

In accordance with Section 1.3.9.2 of RG 1.82 Revision 4, the IRWST sump strainers are evaluated for design basis conditions, including seismic, and are capable of withstanding the force of full debris loading and hydrodynamic loads. This evaluation is described in Technical Report, APR1400-E-N-NR-14002-NP, Rev.0, IRWST Sump Strainer and Trash Rack Structural Analysis.

The trash rack located at the entrance to the HVT is also evaluated for structural integrity. Dead load (D), seismic load (Es), and hydro pressure load (Lh) are considered for the structural loads calculation. The structural element stresses are derived by a finite element model structural analysis which considers combined loads. Trapezoidal differential pressures of 0.41 through 3.25 psi are used to conservatively consider all screen meshes are blocked by debris.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environmental Report.