Non-proprietary Summary of the Holtec Proprietary MPC-37 Drop Analysis in Holtec Report Number HI-2188261 Rev. 3, November 16, 2018

Drop Analysis for a Fully Loaded Multi-Purpose Canister (Model MPC-37)

Holtec analyzed a hypothetical 25-foot drop of a fully loaded multipurpose canister (MPC) of the MPC-37 design used at SONGS for spent fuel dry storage. The hypothetical drop bounds the maximum distance that an MPC could drop if both the support slings suddenly provided no restricting force during the MPC lowering inside an Underground MAXimum storage (UMAX) Vertical Ventilated Module (VVM). This analysis conservatively considers a bounding upper weight for the loaded MPC and models the canister wall as 80% of its thickness. The analysis predicts that the stainless steel containment boundary of the canister would not be breached and no radioactivity from fuel stored inside the MPC-37 would escape, if such a drop occurred.

The Holtec analysis calculates that the most limiting mechanical strains in the MPC-37 from this hypothetical drop would be at the junction between the upper canister shell and the upper cover plate and at the lower canister shell and baseplate junction. The calculation was performed in a very conservative manner; nonetheless, the calculated strains are approximately 1/2 of the allowable value. Consequently, there is a factor of safety of almost two for this unlikely, hypothetical event. The MPC-37 design, without internal stiffening welds, distributes more evenly the energy associated with a drop resulting in lower peak strain and increased margin.

The modeling approach for this analysis was taken from NUREG-1864, "A Pilot Probabilistic. Risk Assessment of a Dry Cask Storage System," March 2007. The NUREG-1864 analyzes an MPC-68 design with stiffening internal structures welded to the canister. The MPC-37 design at SONGS does not have internal welded structures to stiffen it. Consequently, the NUREG-1864 MPC-68 drop analysis predicts higher peak strains than those calculated by Holtec in the SONGS plant-specific MPC-37 drop analysis.

Prepared by Southern California Edison
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