

Conversation Record Summary
Clarification Call with Holtec on HI-STORM Flood/Wind (FW) Amendment 7
February 8, 2024

1. Holtec responded to staff's observations from January 26, 2024 meeting regarding the effect of overpack dynamic response and fuel basket temperature zones on the bounding multi-purpose canister (MPC) and overpack combination that was chosen by Holtec.
2. Holtec discussed the temperature distribution in the fuel baskets. Holtec stated that the temperatures chosen for the MPC-37-CBS basket bounds those for all other baskets, as shown in tables in section 4 of the SAR (e.g., table 4.4.3). Holtec also noted that pressurized-water reactor (PWR) baskets are hotter than boiling-water reactor (BWR) baskets, thus PWR baskets are considered to be more limiting. Therefore, Holtec was confident that there would not be an actual fuel basket thermal reading above 360°C, and that the new temperature zones in the enhanced LS-DYNA model for tip-over would be bounding.
3. Holtec proposed the new fuel basket parameter, beta, to determine whether a new basket is bounded by the existing baskets. Beta is a number reflecting the fuel assembly weight, inner dimension basket cell, and basket thickness. The beta values for all existing FW baskets will be included in the SAR in a new table 2.2.15. This table indicates that the MPC-32ML has the highest beta value, with the MPC-37-CBS and MPC-37 having the same second-highest beta value. Holtec noted that the PWR baskets had the highest beta values and BWR had the lowest.
4. Based on the beta values, Holtec plans to reanalyze the MPC-32ML as the bounding friction stir-welded type basket and the MPC-37-CBS as the bounding CBS type basket, both using the enhanced LS-DYNA model.
5. Holtec agreed with the staff's observation that the overpack impact energy from the tipover event would have an effect on the response of the fuel basket. However, Holtec determined that the fuel basket response is reflected more in the magnitude of the deflection results than the g-levels reported for each overpack type. Therefore, based on deflection results, Holtec concluded that the Version E overpack produces the greatest deflection for the two chosen bounding basket types.
6. Holtec presented the preliminary LS-DYNA results for the sensitivity study performed in response to NRC concerns in the last meeting that the maximum basket stress results were for the MPC-37 basket, and not the MPC-37-CBS basket. Holtec used the enhanced LS-DYNA model for the MPC-37 and the peak stresses were reduced, with no element erosion occurring in the active fuel region. Holtec presented the stress contour plots that reflected these results. The staff expressed that the results and sensitivity studies performed were encouraging.
7. The staff questioned how the basket temperature and overpack impact energy considerations would be included in the revised method of evaluation (MOE), along with the beta value. Holtec did not think that these items needed to be included in the MOE. The staff reiterated that these items should be considered when assessing whether new baskets were bounded by the analyses incorporated in Amendment 7 SAR revision.