

Additional Topics Discussed
SFST Public Meeting with Exelon, LLC

January 10, 2012

1. Computer Code validation
 - Explain if testing has been performed to validate the analytical model and how the analytical model would be validated.
 - Explain and verify how the material properties, such as friction, are affected if equipment components are reused during spent nuclear fuel loading campaigns.
2. Rocking or Sliding
 - Explain if testing has been performed to demonstrate that the cask system would not rock or slide in the longitudinal direction during a seismic event. The licensee performed some tests for Dresden, but no specific tests were conducted at Dresden for longitudinal motion (i.e., rolling) of the LPT. However, HOLTEC commented that they had, in the past, performed numerical simulations for other licensees, using VisualNastran, to quantify the amount of LPT rolling in the longitudinal direction.
 - Consideration should be given to energy losses due to friction of a rocking rigid body and how the model could duplicate physical tests.
3. Non Linear Analysis
 - The licensee should determine how the friction coefficient could be affected over time.
 - The staff mentioned that it is critical for a nonlinear analysis to use real recorded ground motions.
 - The licensee considered a database of ground motions and screened them to determine if a particular spectra shape was a reasonable match to the floor spectra. The licensee considered the applicable Standard Review Plan to determine that there was a reasonable match. Five (5) separate real recorded motions were used.
4. Rigid Body Assumption
 - Verify the stiffness assumed in the ANSYS code to determine if it was appropriate for the structural analysis. Since the system was considered a rigid piece, given the small gap (3/16-inch) between the canister and the cask, the licensee should explain how this gap would impact response.
 - The staff pointed out that the draft of currently being revised ASCE 4-98 guidance may contain new information on sliding and rocking of unrestrained rigid bodies.
 - Considering that there are only two bolts, connecting the mating device to the overpack, the licensee should verify its behavior.
5. Damping
 - The unrestrained spent nuclear fuel loading configuration should be tested and validated for:
 - Changes of coefficient of friction.
 - Slenderness ratio changes once HI-STORM slides over the edge of LPT or shims.
 - Changes of coefficient of restitution with slenderness ratio.