

Staff Discussion

On June 18, 2015, the NRC staff met with personnel from Westinghouse Electric Company (WEC) and Southern Nuclear Operating Company Inc. (SNC) at WEC Offices in Rockville, Maryland, to discuss the technical results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review and path forward for WCAP-17938. This was a Category 2 Public Meeting.

WEC presented two parallel paths that are currently being pursued to reach a resolution for the acceptance gaps; the first would be to expand the jet impingement test program to include a test in the jet core region to characterize the maximum damage the non-metallic insulation (NMI) blocks could see in the Reactor Vessel (RV) cavity; the second approach would be to use analytical modeling - computational fluid dynamics (CFD) and GOTHIC to show that the jet expands in the RV cavity in such a way that the test program from Summer 2014 subjected the NMI blocks to bounding conditions. The Topical Report will be revised to include further justification to address confined jet behavior as well as additional 23 gaps outlined by NRC staff.

The staff appreciated the opportunity to hear from WEC on their plans to address a path forward for WCAP-17938. These plans are designed to provide information that will enable a future acceptance review to take place for Topical Report WCAP-17938. Staff observations and discussion from the meeting include:

1. Testing to demonstrate the survivability of the neutron shield block appears to be an appropriate method to assess the blocks' survivability given the state-of-the-art limitations of analysis (see item 3 below).
2. Testing of the blocks should ensure an appropriate area of the block is exposed to the jet core region, in order to subject as much of the block to the highest pressure region of the test jet. Other scaling issues may need to be addressed as well as difference between tested conditions and actual plant conditions (e.g., pressure in core region in plant versus test).
3. CFD modeling generates a fundamental concern due to the lack of CFD grade test data and the state-of-the-art nature of the modeling approach. If used, questions about uncertainty will need to be addressed. Benchmarking CFD tools with limited test data is not ideal and will lead to more questions.

With respect to intervening barriers: a) the tested intervening barrier would need to be justified as prototypic and representative; b) the failure or lack thereof of the intervening barrier needs to be assessed if that test is used to demonstrate no debris generation; c) if credited, the intervening barrier as it exists in the plant would need to be qualified for the jet (with or without testing); and d) the testing of intervening barriers should ensure an appropriate area of the barrier is exposed to the jet core region etc., (see bullet 2 above).

Staff acknowledged that they would like to observe future testing when it is scheduled.