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10 CFR 50.4

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2
Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Watts Bar Nuclear Plant, Unit 1
Facility Operating License No. NPF-90
NRC Docket No. 50-390

Subject: **Insights from Questions and Responses From March 25, 2010 Discussion Regarding Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors**

On March 25, 2010, a telephone discussion was held between Tennessee Valley Authority (TVA) and contractor personnel and the Nuclear Regulatory Commission (NRC) staff concerning the proposed testing of emergency recirculation sump strainers for the Sequoyah Nuclear Plant, Units 1 and 2 and Watts Bar Nuclear Plant, Unit 1. During this discussion several questions and comments were raised by TVA personnel that were answered or responded to by the NRC staff. At the end of this telephone call, the NRC staff requested that the questions asked and the answers given be documented by TVA and submitted for NRC staff concurrence. The enclosure to this letter provides discussion of the insights from those questions and the respective responses for NRC review and concurrence.

A116
NRR

There are no regulatory commitments in this letter. Should there be any questions regarding this letter, please contact Rod Cook at (423) 751-2834.

Respectfully,

for R. M. Krich

Enclosure
Insights from Questions and Responses from March 25, 2010 Discussion Regarding GL 2004-02 Strainer Testing

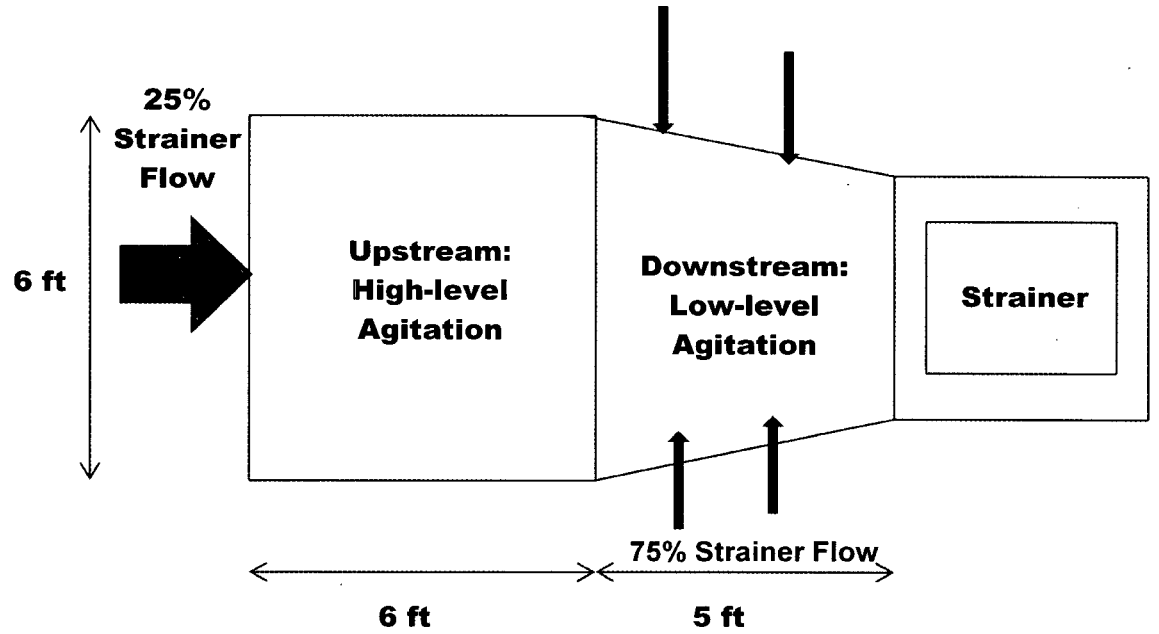
cc: (Enclosure)

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Sequoyah Nuclear Plant
NRC Senior Resident Inspector – Watts Bar Nuclear Plant

ENCLOSURE

Insights from Questions and Responses from March 25, 2010
Discussion Regarding GL 2004-02 Strainer Testing

1. Test Strainer's Configuration – The staff agrees we can / should confine the test strainer on 3 sides; leaving one face on the upstream side of flow to the strainer fully exposed. The distance between the walls and test strainer shall be one half the gap distance between strainers in an array. See test configuration concept below.



Test Apparatus Layout

2. Mixing Energy – The intent is to prevent settling in the upstream high energy area and to use as much mixing energy as is possible to prevent settling in the lower level mixing area. Energy in the lower level mixing area is limited so as not to disturb the test strainer's debris bed during formation and testing.

   A successful thin bed / low fiber test is judged as one where all but residual debris has transported to and on the test strainer.

   A successful high fiber test is judged as one where the test strainer cavity strainer is full of debris and other debris is pushed up against the upstream face of the test strainer cavity. It is therefore acceptable in this situation for debris to also be located

in the low level mixing area as it cannot reach the screen because it is impeded by other debris.

3. Latent fiber can be included with other fiber "fines" in design basis testing. Only fiber "fines" are used in thin bed tests.

4. The staff recommended batches of mixed fibers and particulates not be mixed together prior to introduction for a design basis test. The **Sure-Flow®** Strainer (SFS) Team proposes to mix fibers and particulates separately and to introduce them to the trash pump transfer tank at the same time prior to the introduction of this debris to the test tank. Same goal will be accomplished, i.e. fiber and particulate will be well mixed at introduction. Debris is introduced in several locations to disperse the debris throughout the upstream high energy area of the tank.

   Performance Contracting Incorporated (PCI) proposes to dilute fibers 5 to 1 (on a volume basis); which approximately equates to 8 grams of fiber to 1 liter of water. Staff indicated that they thought an acceptable dilution ratio was up to 15 to 25 grams of fiber to 1 liter of water.

5. The staff recommended the debris transfer tank / pipe and pump be flushed after all debris is introduced. The SFS Team agrees and will also take the pump apart to confirm all debris has been transferred to the tank.

6. The SFS Team proposed for thin bed tests to introduce fibers in incremental batches of one eighth inch thick; up to one half inch. At one half inch of fibers on the screen, the SFS gaps would be closed. The SFS Team believes any thicker bed cannot be considered to be a thin bed for SFS.

   The staff questioned if something less than a one eighth inch thick batch is appropriate to test if something less than a one eighth inch thick bed might be a worst case for the thin bed regime. Given the SFS's uniform flow control to all disks, the SFS Team believes the one eighth inch increment is appropriate.

   The staff cautioned that one eighth inch increments are too large as the max thin bed head-loss condition is approached. For a uniform flow strainer the staff anticipates that the thin bed regime may be achieved at less than a one eighth inch. Staff will comment later on a more detailed approach for thin bed testing and how to judge if the thin bed regime has been achieved, based on incremental head loss changes between fiber additions.

7. When to terminate the non-chemical debris introductions during a thin bed test was discussed. Following comments from the staff, the Tennessee Valley Authority (TVA) asked for clarification regarding the use of subjective terms to describe when a change in head loss should, or should not be accepted as the point at which to stop adding fibers. What the SFS Team heard is the following:

   If after introducing any batch of fibers following the first batch the head loss increase is 10% or less of the previously established head loss, then the introduction of fiber batches should stop. Allow the head loss to stabilize and then introduce chemicals.

If the head loss increases by more than 10% compared to the prior head loss reading, another batch of fibers should be added. This step is repeated until the condition above is reached or until the equivalent of one half inch of fibers has been introduced.

Paul Klein then suggested that adding chemicals to thicker fiber beds might not yield the highest overall head loss.

The SFS Team needs additional clarification from the staff on how to reconcile this comment. In the past history of GSI-191, at whatever debris bed thickness a plant specific design basis reaches its peak thin bed head loss, it is that debris bed to which chemical precipitates should be added. To require otherwise would seem to impose on TVA multiple thin bed tests not required of other licensees and testing vendors "to date."

The staff agreed to provide additional guidance to TVA and the SFS Team on the thin bed test criteria later.

8. TVA will call the staff with milestone schedule dates for the next steps on April 2, 2010 at 10:00 am eastern.

9. The licensee will submit a Test Plan for comment to the staff.