

## TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

July 8, 1981 JUL 13 AM : 58

Mr. James P. O'Reilly, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Region II - Suite 3100  
101 Marietta Street  
Atlanta, Georgia 30303



Dear Mr. O'Reilly:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 81-03 - RII:JPO 50-438,  
-439, -518, -519, -520, -521, -553, -554, -566, -567

As required by your letter dated April 10, 1981, enclosed is TVA's action response to IE Bulletin 81-03: Flow Blockage of Cooling Water to Safety System Components by Corbicula sp. (Asiatic Clam) and Mystilus sp. (Mussel) for the Yellow Creek, Hartsville, Phipps Bend, and Bellefonte Nuclear Plants. In accordance with a telephone conversation between Mike Hellums of my staff and R. V. Crlenjak of your staff, the response to IE Bulletin 81-03 for Watts Bar Nuclear Plant will be submitted on July 23, 1981. If you have any questions, please call Ralph Shell at FTS 857-3260.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Director (Enclosure)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

8107240510 810708  
PDR A-OCK 05000438  
Q PDR

IE11  
5  
1/1

ENCLOSURE  
RESPONSE TO NRC IE BULLETIN 81-03  
FLOW BLOCKAGE OF COOLING WATER TO SAFETY  
SYSTEM COMPONENTS BY CORBICULA SP.

IE Bulletin Item 1

Determine whether Corbicula sp. or Mytilus sp. is present in the vicinity of the station by completing items 1 and 4 above that apply to Operating Licenses (OL).

- A. Determine whether Corbicula sp. or Mytilus sp. is present in the vicinity of the station (local environment) in either the source or receiving water body. If the results of current field monitoring programs provide reasonable evidence that neither of these species is present in the local environment, no further action is necessary except for items 4 and 5 in this section for holders of operating licenses.
- B. Describe methods either in use or planned (including implementation date) for preventing and detecting future flow blockage or degradation due to clams or mussels or shell debris. Include the following information in this description:
  - a. Evaluation of the potential for intrusion of the organisms into these systems due to low water level and high velocities in the intake structure expected during worst case conditions.
  - b. Evaluation of effectiveness of prevention and detection methods used in the past or planned for future use.

TVA Response to Item 1 A

Corbicula sp. does occur in the waters adjacent to the following nuclear plant construction sites: Bellefonte, Hartsville, Phipps Bend, and Yellow Creek. The most recent data for each of the construction sites are presented in the following table:

TABLE 1

<u>Site</u>	<u>Corbicula Data</u>	<u>Report Reference</u>
Bellefonte	October 1979	Preoperational monitoring Report dated October 1980
Hartsville	April 1977	Construction Effects Monitoring Report dated August 1977
Phipps Bend	June 1980	Construction Effects Monitoring Report dated December 1980
Yellow Creek	October 1979	Construction Effects Monitoring Report dated April 1980

Mytilus is a saltwater genus and does not occur in the Tennessee or Cumberland River systems.

TVA Response to Item 1 B

For the purposes of Asiatic clam control, the essential cooling water systems and fire protection systems at all four construction sites are treated similarly and will not be discussed on a site-by-site basis in this response. Prevention of Asiatic clam infestation in safety-related cooling water systems and fire protection systems is accomplished using 1/32" mechanical strainers in conjunction with a regular program of chlorination. Strainers are backwashed automatically and will prevent the introduction of adult clams and/or large pieces of shell debris in system piping. Chlorine has been demonstrated to be an effective molluskiocide and will prevent blockage of cooling water piping caused by the growth of Asiatic clams which enter system piping in the immature stage.

In the event of low water level and high velocity in the intake structure, the automatic backwash feature of the strainers will prevent blockage of cooling water and fire protection flow. Although it is anticipated that an increase in the volume of clams drawn into the suction of the pumps would occur, the strainers will handle the increase.

In a memorandum dated November 17, 1976, guidance was given to TVA's construction forces on control of Asiatic clam biofouling during construction and startup. The memorandum advises that the initial fill of all raw water systems will be chlorinated, and that a program of regular sampling at remote points in the system will be established to ensure that the specified chlorine residual is maintained. Freshly chlorinated water is to be added as required. If a component is isolated from the system such that it is not possible to maintain the specified chlorine residual, the memorandum advises that the component be drained and, where possible, inspected and cleaned.

Permanent onsite sodium hypochlorite generation systems have been procured and will eventually be installed and available for use at all four plants. In the interim, the construction sites are using or will use temporary chlorination equipment to ensure that the chlorination program can be carried out.

I. September of 1978, TVA issued Design Guide DG-M12.4 entitled "Asiatic Clam Control." This document specifies that provisions are to be made in the design such that during clam spawning season, or whenever the river water temperature exceeds 60°F, the essential cooling water systems may be chlorinated continuously. The fire protection systems are to be chlorinated during the semiannual flush and during the flush after a fire. In addition, the water used to maintain the fire protection system pressure is to be chlorinated. The surveillance requirements established for the fire protection system at Bellefonte ensure that regular inspections are performed and that flow blockage by Asiatic clams or anything else will be detected. It is anticipated that similar requirements will exist for Hartsville, Phipps Bend, and Yellow Creek.

#### IE Bulletin Item 2

If these organisms are present in the local environment and potentially affected systems have been filled from the station source or receiving water body, determine whether infestation has occurred.

No infestation of essential cooling water systems or fire protection systems has been detected at the construction sites. At Bellefonte, the portions of these systems which are operational have been inspected periodically during nonscheduled maintenance activities and no evidence of clam infestation has been found. At Hartsville, no flow blockage has been experienced. At Phipps Bend and Yellow Creek, these systems have not yet been filled with raw water.

IE Bulletin Item 3

Describe the actions taken in items 1 and 2 above for construction permit holders and include the following information:

- a. Applicable portions of the environmental monitoring program including last sample date and results.
- b. Components and systems affected.
- c. Extent of fouling if any existed.
- d. How and when fouling was discovered.
- e. Corrective and preventive actions.

TVA Response to Item 2 and 3

The information for this response was obtained from design engineers and construction site engineers. The response to question no. 2 regarding actual infestation of the systems in question is based on previous information, i.e., no attempt was made to inspect these systems as a direct result of this bulletin. Items a-e have been addressed in our responses to question nos. 1 and 2.