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Carolina Power & Light Company

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Mr. James P. O'Reilly, Regional Administrator  
United States Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 3100  
Atlanta, GA 30303

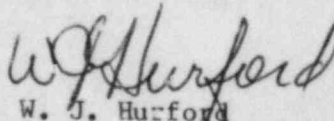
SHEARON HARRIS NUCLEAR POWER PLANT  
UNIT NOS. 1 AND 2  
DOCKET NOS. 50-400 AND 50-401  
IE BULLETIN NO. 81-03

Dear Mr. O'Reilly:

As requested by IE Bulletin No. 81-03, "Flow Blockage of Cooling Water to Safety Components by Corbicula sp. (Asiatic Clam) and Mytilus sp. (Mussel)," dated December 10, 1982, and in accordance with the schedule set forth in our February 8, 1983 letter, Carolina Power & Light Company hereby submits, in the attachment to this letter, responses to the requested additional information for the closing of the issue.

If you have any further questions on this subject, please advise.

Yours very truly,



W. J. Hurford  
Manager  
Technical Services

PS/mag (6436PSA)  
Attachment

cc: Mr. N. Prasad Kadambi (NRC)  
Mr. G. F. Maxwell (NRC-SHNPP)  
Mr. J. P. O'Reilly (NRC-RII)

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REQUEST FOR ADDITIONAL INFORMATION

IE BULLETIN NO. 81-03

- 1.(4A) No discussion of intrusion potential if and when Corbicula sp. becomes established in reservoir. Please assess and respond.

If and when Corbicula sp. becomes established in the Harris main and/or auxiliary reservoirs, the potential will exist for adults, larvae, and shells to be entrained into the service water and fire protection systems of the SHNPP. However, various design and operating conditions are expected to reduce the probability of flow reduction or blockage to safety system components by Corbicula sp.

No flow reduction or blockage problems are expected to result in the normal Service Water System (SWS). This system is designed to withdraw service water from the closed-loop Circulating Water System (CWS) at the cooling towers. Because the physical and chemical climate of the cooling towers will be unfavorable to Corbicula sp. habitation; and because the service water is designed to be chlorinated to maintain a 0.5 ppm residual chlorine concentration at the heat exchanger outlet, Corbicula sp. intrusion of the SWS is not probable.

The Emergency Service Water System (ESWS) will withdraw water from the auxiliary reservoir or, if that source is unavailable, from the main reservoir. From either source, the emergency service water will be pumped to the normal SWS. Because the ESWS pumps will be operated monthly, no accumulation of silt or Corbicula sp. will occur in the ESWS pipelines from the intake structure to the junction with the normal SWS. Corbicula sp. does not attach, so any young adults that grow from larvae that settle there will be flushed through the system before growing large enough to reduce or block service water flow.

The greatest potential for flow reduction or blockage in the SWS will result from the accumulation of silt and Corbicula adults and/or shells in the ESWS pump suction bays behind the travelling screens. The travelling screens with a mesh size of 3/8" will prevent other adults or shells from entering the ESWS intake bays. If significant buildups occur, the adults or shells would be picked up by the ESWS pumps suction; however, 1/16" self cleaning strainers are located at the discharge of the ESWS pumps to preclude passage into the ESWS. Two factors which may reduce the likelihood of high Corbicula sp. densities in the intake bays are the water depth and the monthly operation of the service water pumps. At normal water level, the depth at the ESWS intakes on the auxiliary reservoir and main reservoir will be 60 feet and 30 feet, respectively. Low oxygen levels at these depths during summer months should inhibit occurrence and growth of Corbicula sp. The monthly operation of the ESWS pumps should minimize the buildup of silt in the intake bays thus minimize favorable substrate for Corbicula larvae to settle and grow into adults.

The potential intrusion by Corbicula sp. into the Fire Protection System (FPS) may be possible by makeup of water containing larvae. The larvae could settle in low points of the system where they may grow into adults. Also, as described for the ESWS, Corbicula adults and/or shells would be entrained from possible accumulations behind

travelling screens at the intake bays on the auxiliary reservoir. Any adults or shells that enter or develop in the FPS could then reduce or block flow through small pipes, valves, or sprinklers. Because the FPS pumps will be operated weekly for testing and because portions of the system will be flushed as often as quarterly; Corbicula larvae, and possibly adults and shells, would be entrained.

- 1.(4b) No information provided regarding planned control or detection methods. Please respond and describe inspection procedures and control technology under consideration.

Because the potential for Corbicula sp. intrusion of the SWS, ESWS, and FPS exists, the following inspection procedures and control measures will be planned:

#### SWS and ESWS

- a. During normal refueling outages, selected service water heat exchangers will be inspected for the presence of Corbicula sp.
- b. The SWS will be chlorinated as described in 1.(4a) above if Corbicula sp. or other biofouling is suspected or found in the SWS.
- c. Once Corbicula sp. are found in the reservoir during regular environmental monitoring of the benthic macroinvertebrate populations, periodic sampling of the intake bays behind the travelling screens will be initiated.
- d. If significant densities of adults or accumulation of shells are found in the intake bays, periodic treatment of the bays with oxygen scavenging chemicals [e.g., sodium-metabisulfate ( $\text{Na}_2\text{S}_2\text{O}_5$ )] will be initiated as required to control the Corbicula sp.

#### FPS

- a. Low-point blowdown drains will be used to periodically inspect the FPS for evidence of Corbicula sp.
- b. Once Corbicula sp. are known to inhabit the auxiliary reservoir, chlorination units will be installed at the intake pumps. Chlorine would be injected consistent with pump operation.
- c. When Corbicula sp. are found in the auxiliary reservoir, the FPS intake bay behind the travelling screens will be inspected and treated as described for the ESWS intakes in (c) and (d) above.

- 2.(4b) No information provided regarding status of construction. Please respond and, if any systems have been filled, describe inspection procedures and results.

All fire protection systems have been filled and pressurized as needed to protect equipment already installed. With the exception of fire protection, no piping associated with those systems of interest



are presently filled at SHNPP. These systems may be filled for hydrostatic testing as early as May of 1983, and subsequently be flushed, drained, and thoroughly inspected no earlier than January 1984.

3.a Provide last sampling date and results.

Quarterly sampling of the benthic community developing in the Harris Reservoir was conducted during February, May, August, and November 1982. No Corbicula sp. were found in any of the samples collected indicating that the clams are not in the main reservoir.

Sampling planned for 1983 will include two new stations. One will be in the main reservoir near the mouth of the cooling tower makeup intake channel, and the other will be in the auxiliary reservoir near the mouth of the emergency service water intake channel.

3.e See 1.(4b) above for planned corrective and preventive actions.