

June 5, 2003

Mr. John P. Wolflin, Supervisor  
U.S. Fish and Wildlife Service  
Chesapeake Bay Field Office  
177 Admiral Cochrane Drive  
Annapolis, MD 21401

SUBJECT: RESPONSE TO RECOMMENDATIONS MADE IN FEBRUARY 4, 2003,  
LETTER CONCERNING NORTH ANNA POWER STATION, UNITS 1 AND 2  
(TAC NOS. MB1994 AND MB1995)

Dear Mr. Wolflin:

This letter is in response to your letter dated February 4, 2003, in which the U.S. Fish and Wildlife Service (USFWS) made four recommendations to the U.S. Nuclear Regulatory Commission (NRC) after reviewing the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Supplement 7 Regarding North Anna Power Station, Units 1 and 2 (SEIS) issued in November 2002. The SEIS was issued by the NRC staff as part of the license renewal effort for the North Anna Power Station Units 1 and 2 (North Anna). The staff appreciates the USFWS's interest in providing comments on the SEIS. The recommendations in your February 4, 2002, letter related to the protection of fish and wildlife resources found on and near the North Anna site. The four recommendations are 1) install upstream fish passage at the North Anna Dam; 2) develop a method to return impinged fish from the cooling water intake screens back to the lake, reduce the intake screen mesh size to 1 mm or less, and reduce intake screen approach velocity; 3) minimize impacts from the heated water discharges on fish distribution, spawning, and feeding; and 4) record and maintain migratory bird mortalities at the station. The staff will respond to each of the recommendations in the order listed above.

The NRC staff does not plan to recommend that the North Anna licensee, Dominion Power, install a fish passage system at the North Anna Dam to allow diadromous and riverine fish species to move from Lake Anna to the North Anna River below the dam and visa versa. As we stated in our letter of March 14, 2002, and in Section 4.7.1 of the (SEIS), the impacts associated with the operation of the North Anna Dam are outside the scope of the license renewal review. Irrespective of the issues related to the scope of the review the staff also finds that the lack of any historical data to support the existence of anadromous fish populations inhabiting this portion of the watershed, and the unlikely occurrence of fish movement of any significant numbers from a small riverine habitat to and from a large lake makes a fish passage system at the North Anna Dam of doubtful value.

Your letter recommended the installation of a fish return system to return fish impinged on the intake screens to the lake. Section 4.1.2 of the SEIS discusses impingement impacts to fish inhabiting Lake Anna and concludes that the impact to the lake fishery is small and no additional mitigation is warranted. As stated in the SEIS, Dominion Power has conducted a

316(b) demonstration and is in compliance with the requirements of the Clean Water Act of 1972 (Virginia Department of Environmental Quality Permit No. VA0052451). An examination of sampling data from the lake has shown that the mean standing crop of fish was relatively stable from 1978 through 1983. The 316(a) demonstration and recent monitoring data also shows the Lake Anna fish population to be diverse and relatively stable.

Your February 4, 2003, letter makes the additional recommendation that worn or damaged intake screens be replaced with screens with a mesh size of less than or equal to 1 mm wide (.025 in.) and an entrance [approach] velocity of .15 m/sec (0.5 fps). The current screen mesh size is .95 cm (3/8 in.) and the approach velocity in front of the trash rack in front of the intake screens is .3 m/s (1.0 fps).

The NRC staff is aware of the source of the recommended 1 mm mesh size for water intake systems in Virginia. It is based on a report for the Virginia Department of Game and Inland Fisheries (VDGIF) prepared by C. Gowan, G. Garman, and W. Shuart, dated April 1999. This preliminary study was based on a review of the literature and contains no empirical data related to Virginia fishes. The 1 mm mesh size is an extrapolated value based on some work done in 1981 where no mesh size smaller than 4 mm was utilized and no fish smaller than 25 mm tested. The 1 mm value is derived based solely on calculations presumed to physically exclude certain sized organisms.

The NRC staff has concerns about making a recommendation to use such a small mesh size based on such limited data. For example, organisms that now pass through the current screens and experience some mortality due to elevated temperatures and mechanical damage may experience greater mortality rates if they become impinged on the much finer mesh screens. The higher mortality rates may in fact be more detrimental to the Lake Anna fish populations. Gowan, et al. (1999) focused only on the mechanics of physically screening out organisms of a certain size, not the impact of a particular mesh size on the population dynamics of target species. There are also practical concerns such as whether or not the current screen house would be able to obtain enough water to continue to safely operate the nuclear power plant through the significantly reduced mesh size screens. Unless it can be demonstrated that continued plant operation is having a significant impact on the North Anna fishery, that a fish return system or the reduced mesh size would mitigate the impact, and the use of a 1 mm mesh size at the facility is technologically feasible, the NRC staff does not plan to pursue this issue further.

The approach velocity in front of the intake screens has an effect on impingement rates. High velocities are expected to result in increased impingement. Reduction in approach velocities in front of the intake trash bars would require significantly reducing flow, or enlarging the intake, or extensively modifying the traveling screens. Since fish impingement at North Anna has not been identified as an issue that is having an adverse impact on North Anna fisheries, the staff believes that reducing current approach velocity by approximately 0.15 m/sec (0.5 fps) in front of the intake structure is unnecessary.

Your letter recommends that the licensee minimize any impacts from the thermal discharges on fish distribution, spawning, and feeding. As stated in Section 4.1.3 of the SEIS for North Anna,

the licensee has prepared a successful 316(a) demonstration and has a valid discharge permit issued by the Commonwealth of Virginia. The cooling water discharge from the plant enters a series of three cooling lagoons called the Waste Heat Treatment Facility (WHTF) where the residence time for the heated discharge is approximately 14 days. During the residence time more than half of the stations heat is dissipated from the water. Data presented in the 316(a) demonstration along with more recent monitoring data showed Lake Anna to contain a highly abundant and diverse fishery. The lake supports a higher standing crop of fishes when compared to similar southeastern reservoirs. The community structure has remained fairly stable since 1975 with some year-to-year variation in species composition. Monitoring of fish populations by Dominion Power in the lake is ongoing and monitoring data are reviewed every 3 years as part of a post Section 316(a) demonstration environmental agreement with the Virginia Department of Environmental Quality. Based on the above, the NRC staff concluded in the SEIS that thermally related impacts to the fishery in Lake Anna were small and no additional mitigation is warranted.

Your last recommendation refers to the use of a Raptor Incident Report form to document instances of raptor mortalities associated with the North Anna transmission lines. We have examined the Dominion Power procedures related to raptor fatality reporting. The procedures require the completion of a Raptor Incident Report and notification of the Commonwealth of Virginia or the State of North Carolina and the USFWS. The staff believes that the licensee's program is consistent with your recommendation.

Again, notwithstanding our final conclusions, the NRC staff would like to thank the USFWS for their participation in the North Anna license renewal review. On March 20, 2003, the NRC issued the renewed licenses for both North Anna Units 1 and 2. If you have any further comments on the above issues, please contact Dr. Michael Masnik at 301-415-1191 or [MTM2@NRC.GOV](mailto:MTM2@NRC.GOV).

Sincerely,

**/RA/**

Pao-Tsin Kuo, Program Director  
License Renewal and Environmental Impacts Program  
Division of Regulatory Improvements Programs  
Office of Nuclear Reactor Regulation

Docket Nos.: 50-338 and 50-339

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**/RAI**

Pao-Tsin Kuo, Program Director  
License Renewal and Environmental Impacts Program  
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Docket Nos.: 50-338 and 50-339

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