



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
NORTHEAST REGION  
One Blackburn Drive  
Gloucester, MA 01930-2298

SEP 28 2006

Mr. Frank Gillespie, Director  
Division of License Renewal  
Office of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

RE: Essential Fish Habitat Consultation Regarding License Renewal of Oyster Creek Nuclear Generating Station (TAC NO. MC7625)

ATTN: Dr. Michael Masnik, Senior Environmental Project Manager

Dear Mr. Gillespie:

The National Marine Fisheries Service (NMFS) has reviewed the essential fish habitat assessment that is contained within the draft supplement 28 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS). The GEIS evaluates the proposed renewal of the operating license for the Oyster Creek Nuclear Generating Station (OCNGS), located in Lacey Township in Ocean County, New Jersey, for a period of an additional 20 years. We have submitted letters concerning the adverse effects to aquatic resources associated with the operation of this plant over the past three decades. The GEIS indicates that the plant has incurred adverse impacts on the estuarine community of Oyster Creek, the South Branch of Forked River, and a major portion of Barnegat Bay through its thermal discharge and cooling water intake facilities.

The supplement environment impact statement (SEIS) that was prepared by the U.S. Nuclear Regulatory Commission (NRC) evaluates the proposed action of license renewal for OCNGS and initiates an essential fish habitat consultation. The essential fish habitat assessment is included in Appendix E of the draft SEIS.

**Project Background:**

OCNGS employs a once-through cooling system designed to remove waste heat from the condensers. The circulating water system includes the intake canal, an intake structure divided into two bays, circulating water pumps, condensers, dilution pumps, discharge pipes, and the discharge canal. The system is capable of pumping as much as 1.25 million gallons per minute (gpm), but typically pumps less than one million gpm. An angled boom in the intake canal is immediately in front of the circulating water intake, preventing large mats of aquatic plant material, such as eelgrass (*Zostera marina*) and algae, from clogging the intake system. One purpose of the dilution pumps is to decrease



the attraction of migrating species of fish to the heated discharge during the fall, so that they will not remain in the estuary and become trapped by the heated discharge in the winter. Another purpose is to reduce thermal stress on the organisms in the discharge canal during the summer.

Barnegat Bay is the plant's cooling water source and heat sink. Cooling water is drawn from Barnegat Bay through the South Branch of Forked River and into a 150-foot-wide discharge canal, which also receives dilution water at ambient temperature; the water then flows to Oyster Creek and back to Barnegat Bay. Depths in the South Branch of the Forked River, canals, and lower reaches of Oyster Creek are maintained by periodic dredging.

### **Impacts on Aquatic Resources from Operation of the Cooling Water Intake**

Page 4-17 of the document notes that impingement mortality studies were conducted between 1975 and 1978, and then again in 1985. We note concern that the latest study in the time series was conducted in 1985, 21 years ago. Table 4.5 summarizes the number of organisms impinged and the mortality significance for bay anchovy (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), blue crab (*Callinectes sapidus*), sand shrimp (*Crangon septemspinosa*), Atlantic silverside (*Menidia menidia*), and winter flounder (*Pseudopleuronectes americanus*). The average annual impingement loss ranges from 13,000 winter flounder to eight million sand shrimp. Table 4.3 also lists hard clam (*Mercentaria mercenaria*), and opossum shrimp (*Neomysis integer*), including the organisms listed in Table 4.5, as organisms regularly entrained in large numbers. Despite large numbers of organisms impinged and entrained, the document notes that NRC staff concludes that potential impacts on fish and shellfish would be small, but acknowledges that compliance with EPA's phase II regulations may require modification of the facility.

The Alternatives Section of this document notes that a once-through (closed cycle) cooling system would result in a 70% decrease in water intake rates, which would likely result in a proportionate decrease in the number of impinged organisms.

### **Impacts on Aquatic Resources from the Cooling Water Discharge**

Page 4-22 of the document discusses the history and effects of the thermal discharge, noting the possible need to modify thermal discharges, noting a high number of fish kills, likely caused by thermal shock due to an interruption of the heated effluent, especially during winter months. The document notes that NRC staff has concluded that, with plant changes in operation to regulate thermal discharges, and with expanded monitoring of the aquatic environment, potential impacts on fish and shellfish were determined to be small. We agree that operation changes and expanded monitoring have reduced the potential impact on fisheries, but do so with the caution that past fish kills, as with all fish kills, were likely underestimated. Many expired fish may have never surfaced for observation, and many of those that did surface were consumed by birds. In addition, we note that past fish kills often occurred as a result of emergency or unscheduled plant shutdowns,

especially in the winter. The document does not indicate how such emergency or unscheduled shutdowns which can result in fish kills would be less likely in the future.

#### **Essential Fish Habitat Comments:**

Fourteen federally managed species with EFH designations within the vicinity of OCNGS were identified in the EFH assessment. Of these, according to NRC's assessment, thirteen federally managed species could receive a substantial adverse effect due to the withdrawal of water via a once-through cooling system. However, the conclusion on page E-61 states that "OCNGS operations do not have an adverse effect on the food web in Barnegat Bay;" that "current mitigation measures reduce the potential adverse effect on EFH; and that "an additional 20 years of operation would result in a minimal adverse effect on EFH." The NRC has also determined that continued operation of the OCNGS' cooling system, with its existing mitigation measures, is expected to have a minimal adverse effect on EFH.

NMFS does not concur with the conclusion of the EFH assessment. The history of the plant operation, as documented throughout the GEIS, shows that thermal, entrainment, and impingement impacts are directly impacting EFH species and their prey species. These impacts have been well documented and the OCNGS operation continues to have direct and cumulative effects.

According to Table 5 of Appendix E of the SEIS (the EFH assessment), prey items consumed by twelve EFH species are regularly entrained or impinged at OCNGS. These species are black sea bass, bluefish, clearnose skate, dusky shark, little skate, red hake, sandbar shark, scup, summer flounder, tiger shark, windowpane flounder, winter flounder, and winter skate (Steimle, et al. 2000). Of the prey items, bay anchovy, sand shrimp, blue crab, and silversides are impinged or entrained in significant numbers, according to the document. In addition, four species, bluefish, scup, summer flounder, and winter flounder, have some life stage commonly destroyed by thermal, entrainment, or impingement impacts. Of these four species, winter flounder mortalities through impingement and entrainment are of greatest concern as the mortalities are relatively high in relation to the population. Collectively, the species represent a trophic hierarchy that receives food web impacts which are relevant to NRC statement above as "substantially adverse."

NMFS is particularly concerned about the OCNGS's cooling system's impact on winter flounder because recruitment of winter flounder has been below average since 1989; and the 2001 year class appears to be the smallest in 22 years (NEFSC 2003).

According to the NJDEP's Fact Sheet, NJPDES #NJ000550 regarding the OCNGS's Surface Water Renewal Permit Action, a "closed cycle cooling is the only cooling water intake structure technology available to the facility to reduce entrainment." NMFS agrees that "a closed cycle cooling serves to significantly limit the amount of intake flow and thereby reduces both impingement and entrainment."

### **Essential Fish Habitat Recommendations:**

To minimize the impacts on EFH, pursuant to Section 305(b)(4)(A) of the MSA, NMFS recommends that the following conservation recommendation be adopted:

Implement the best available technology to mitigate impingement, entrainment, and thermal impacts. This is apparently best represented by the use of cooling towers to place the plant on a closed cycle cooling system. A closed cycle cooling system would reduce the water intake rates by 70%, and likely result in a proportionate reduction in fish and shellfish mortalities.

Please note that Section 305(b)(4)(B) of the MSA requires that the NRC provide NMFS with a detailed written response to this EFH conservation recommendation, including a description of measures adopted by the NRC for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with NMFS' recommendation, Section 305(b)(4)(B) of the MSA also indicates that the NRC must explain its reasons for not following the recommendation. Included in such reasoning would be the scientific justification for any disagreements with NMFS over the anticipated effect of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effect pursuant to 50 CFR 600.920(k).

Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920(l), if new information becomes available or the project is revised in such a manner that affects the basis for the above EFH conservation recommendation.

### **Endangered Species Act (ESA)**

Endangered and threatened Sea turtles may be present in the project area. The NRC is currently in consultation with the NMFS Northeast Region's Protected Resources Division pursuant to Section 7 of the ESA and the NRC will conclude the ESA consultation with this division of NMFS.

If you have any questions regarding these comments or need additional information, please contact Stan Gorski at 732-872-3037.

Sincerely,



Peter D. Colosi, Jr.  
Assistant Regional Administrator  
for Habitat Conservation

cc: PRD – M. Colligan