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December 15, 2006

Mr. Peter C. Colosi, Jr.
Assistant Regional Administrator for Habitat Conservation
National Marine Fisheries Service
Northeast Region
One Blackburn Drive
Gloucester, MA 01930-2298

Mr. P. T. Kuo, Acting Director
Division of License Renewal
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Oyster Creek Nuclear Generating Station, Essential Fish Habitat Consultation Regarding License Renewal

Dear Messrs. Colosi and Kuo:

AmerGen Energy Company, LLC (AmerGen) received a copy of the National Marine Fisheries Service (NMFS) letter, dated September 28, 2006, to the U. S. Nuclear Regulatory Commission (NRC) in response to the draft Supplemental Generic Environmental Impact Statement for Oyster Creek Nuclear Generating Station License Renewal. AmerGen responded with a brief letter to NMFS and the NRC on November 2, 2006, indicating that it would provide additional information regarding aspects of the NMFS letter. In today's letter, AmerGen is providing that additional information.

Statutory and Regulatory Background

Section 305(b)(4)(A) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires the Secretary of Commerce to recommend to federal agencies measures that can be taken by such agencies to conserve essential fish habitat (EFH) when agency actions would adversely affect any EFH. NMFS addressed the MSA mandate by recommending, in its letter to NRC, that Oyster Creek Generating Station (OCGS) implement the best available technology to mitigate impingement, entrainment, and thermal impacts. NMFS noted that it believes that the best available technology is apparently best represented by the use of cooling towers and that a closed cycle cooling system, which would reduce water intake rates by 70 percent, would likely result in a proportionate reduction in fish and shellfish mortalities.

The New Jersey Department of Environmental Protection (NJDEP) is authorized by the U. S. Environmental Protection Agency (EPA) to implement National Pollutant Discharge Elimination System (NPDES) provisions of the Clean Water Act (CWA). Accordingly, NJDEP has the authority to determine what constitutes compliance with CWA Sections 316(a) and (b) which regulate thermal discharges and the adverse impacts of cooling water intake structures, respectively. Cooling towers are but one means of complying with the requirements of these sections of the CWA, and, as AmerGen has presented to NJDEP, cooling towers would not be a universal remedy and would come with some serious disadvantages at the OCGS site (Ref. 3).

Cooling Towers

Operating OCGS with cooling towers would reduce, but not eliminate, fish and shellfish mortalities. In addition to residual impingement and entrainment losses, the risk of losses from cold shock in Oyster Creek due to loss of heated effluent during emergency winter shutdown would remain. In promulgating its MSA implementing rules, NMFS expressly rejected inclusion of any threshold of acceptable EFH impacts. Therefore, AmerGen believes that, even if cooling towers were installed, Oyster Creek would continue to affect EFH. Moreover, for the reasons outlined below, AmerGen believes impacts from the existing operating configuration are acceptable.

At the time of OCGS construction, the plant owner (Jersey Central Power and Light Company) and the NRC predecessor (Atomic Energy Commission) evaluated cooling towers as an alternative for OCGS. In 1992, the plant owner (then GPU Nuclear) completed another study of cooling towers, and in 2006 AmerGen completed another evaluation of cooling towers at OCGS. In this recent evaluation, AmerGen selected the linear hybrid cooling tower system (a combination of wet evaporative and dry cooling) as most appropriate for OCGS. AmerGen found the following drawbacks to cooling tower operation at OCGS (Ref. 3):

- Noise Impacts – Cooling tower noise would violate state and local standards. AmerGen would be required to obtain variances and/or buy easements. Use of traditional abatement measures such as berms and barriers would be limited due to new security requirements for nuclear power plants. AmerGen concluded that this impact would be MODERATE to LARGE.[1]

- Air Quality Regulatory Compliance - Total suspended and dissolved solids in the saline Barnegat Bay waters used to make up water loss due to evaporative cooling from the towers would create OCGS cooling tower air emission impacts. Incremental PM_{10} (particulate

[1] The NRC employs, and AmerGen used in the cooling tower analysis, a three-level standard of significance—SMALL, MODERATE, or LARGE—developed using the Council on Environmental Quality guidelines. The definition are set forth in footnotes to Table B-1 of 10 CFR Part 51, Subpart A, Appendix B:
SMALL: Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
MODERATE: Environmental effects are sufficient to alter noticeably, but not to destabilize, any important attribute of the resource.
LARGE: Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

matter less than 10 microns in diameter) concentrations at the nearest site boundary would exceed the allowable 24-hour and annual prevention of significant deterioration Class 2 increments. When added to the background concentration, the total PM_{10} concentration at the site boundary would exceed the 24-hour National Ambient Air Quality Standard (NAAQS) for PM_{10} and the New Jersey Ambient Air Quality Secondary Standard for annual total suspended particulates. AmerGen concluded that this impact would be MODERATE and that the ability to obtain an air permit for the cooling towers carries a significant regulatory approval uncertainty.

- Aesthetic Impacts – The linear hybrid cooling tower system would optimize reduction of consumptive water use, fogging, and aesthetic impacts. However, the towers would be contained in a linear structure that would be approximately 120 feet wide, 1,000 feet long, and 80 feet tall. While not as obtrusive as alternative designs (e.g., the single large, hyperbolic tower evaluated in the previous study), the hybrid system would have an aesthetic impact due to its size and could be controversial for this reason. AmerGen concluded that potential impacts on aesthetics would be SMALL to MODERATE.

- Salt Drift Impacts – AmerGen estimates that salt drift in one offsite sector would exceed NRC's level of significance for visible leaf damage. In addition, there may be impacts associated with buildings and electrical equipment in the area surrounding Oyster Creek. AmerGen concluded that this impact would be SMALL to MODERATE.

- Land Use (and Coastal Zone Regulatory Compliance) – New Jersey limits impervious surface cover within the coastal zone, and the OCGS vicinity (Lacey Township) is effectively at its limit. It is not known whether the 10.5 acres of impervious surface that tower construction would necessitate would be approvable by the state and whether AmerGen could demonstrate compliance with the coastal zone regulations for impervious cover. In addition, AmerGen would be required to obtain a non-conforming-use variance from the township land use code for the construction, an additional source of uncertainty. AmerGen concluded that impacts associated with land use would be MODERATE to LARGE.

- Replacement Power Air Pollution - Use of cooling towers would result in a net average generation loss of 32.5 megawatts electric [MW (e)] at OCGS. AmerGen estimated that fossil-fuel replacement of this MW (e) would increase air emissions by approximately 501 tons per year (tpy) SOx, 356 tpy NOx, 1134 tpy CO, and 807 tpy PM_{10}.

- Cost – AmerGen estimates that the cost of constructing and operating cooling towers would be between $705 million and $801 million, amortized over 10 years (per EPA rules).

OCGS Impacts to Barnegat Bay Fisheries

Jersey Central Power and Light and GPU, the previous owners of OCGS, evaluated marine fish populations and marine fish habitat of Barnegat Bay from 1965 to 1986, including nine years of intake screen impingement sampling (1976 to 1985). The owners used these data to demonstrate that OCGS was in compliance with the Clean Water Act 316(a) and (b) rules that were in effect in the 1970s and 1980s. In 1989, the New Jersey Department of Environmental Protection

(NJDEP) completed an analysis of the OCGS data in order to independently assess the impact of OCGS operation on the populations in Barnegat Bay. NJDEP concluded that there was an acceptable level of impact such that the continued operation of OCGS would not adversely impact the long-term protection of balanced, indigenous populations of fish, shellfish, and other wildlife in Barnegat Bay and that granting a 316(a) variance would not adversely affect these populations in the Bay. In addition NJDEP concluded that:

- Plant-related losses at OCGS do not adversely impact spawning and nursery functions of the selected representative important species
- Plant-related losses at OCGS do not significantly increase the abundance of nuisance species
- Plant-related losses at OCGS do not adversely affect the estuarine food web of Barnegat Bay
- Plant-related losses at OCGS do not adversely impact beneficial uses of Barnegat Bay

Based on its analysis NJDEP concluded that:

- the OCGS thermal discharge, as regulated, would ensure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on Barnegat Bay, and
- the location, design, construction, and capacity of the OCGS cooling water intake structure reflected the best technology available for minimizing adverse environmental impacts

In 1994, with the issuance of the NJPDES permit, the NJDEP granted a 316(a) variance based upon data collected between 1975 and 1985. For that permit, the NJDEP was required to evaluate the impact of the OCGS on marine fish and fisheries to ensure that the continued operation of the facility would "...assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife..." in and on the receiving water body.

In the July 2005 Draft NJPDES Permit Renewal, the NJDEP proposed to renew the 316(a) variance. In order to make that proposal, the NJDEP was required to evaluate the impact of the OCGS on marine fish and fisheries to ensure that the continued operation of the facility would "...assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife..." in and on the receiving water body. This proposed extension of the variance was based on the data collected between 1975 and 1985, the 1989 conclusions that NJDEP determined remain reasonable and valid today, and the NJDEP conclusion in the draft permit that "...the facility's operations have not changed appreciably since the time that the existing permit was issued..."

EPA revised its Clean Water Act 316(b) rules in 2004 with the issuance of the Phase II facility regulations which focus on reducing impingement mortality and entrainment instead of the historic focus on impacts to populations. In September 2006, AmerGen completed one year of

impingement and entrainment data collection at OCGS as a preliminary step to demonstrating compliance with the CWA Section 316(b) regulations for Phase II facilities. These data were obtained between September 2005 and September 2006, during a year of average temperatures (for example, the monthly mean temperatures at Atlantic City for the first 10 months of 2006 all fell within the range of mean monthly temperatures between 1958 and 2005 in Atlantic City).

To support certification of OCGS's compliance with the New Jersey Coastal Zone Management Act, AmerGen did a preliminary comparison of the Phase II impingement and entrainment data to the historic data for selected marine organisms. Based on this comparison, with few exceptions, the species collected in 2005 – 2006 are the same as those collected historically. The ranking of species currently impinged at OCGS are generally within the range of variability exhibited by the ranked historic impingement data and the numbers impinged in 2006 are generally within the range of the historic impingement numbers. Further, 6 of the 10 most commonly collected species in 1976 were among the 10 most commonly collected species in 2006. In other words, the fish and shellfish species most frequently impinged in 2006 tend to be the species that were most frequently impinged between 1975 and 1985.

AmerGen also looked at recent and historic entrainment data for winter flounder, summer flounder, American eel, Bay anchovy, weakfish, northern pipefish, northern puffer and Atlantic silverside. The 2006 catches are generally higher than catches in many past years for nearly every species evaluated, suggesting that 2006 was a strong year-class for many species. The species composition of the entrained organisms is comparable among the years. Entrainment and impingement rates are density dependent – if there are lots of fish in the water it is reflected in high numbers; fewer fish in the water result in lower rates. Recent evidence of this phenomenon includes the decline in abundance of winter flounder in the Mid-Atlantic region which is reflected in the relatively low numbers of winter flounder in the 2006 OCGS samples, and the increase in regional abundance of the Atlantic croaker which is reflected in relatively high numbers collected at OCGS in 2006 (Ref. 1).

AmerGen had three data sets to compare: historic impingement and entrainment data, historic marine fisheries population data, and current impingement and entrainment data. Because of the demonstrated relationship between historic impingement and entrainment data and historic population data, AmerGen has assumed that the same relationship continues to exist. Therefore, AmerGen expects that the consistency between historic and current impingement and entrainment data is representative of the consistency between historic and current populations. Because the recent data are within the range of variability exhibited in the historic fish and invertebrate collections, because the species diversity is similar between the two collection periods, and because OCGS operations have not changed, it is reasonable to conclude that the operation of OCGS continues to have no adverse impacts on the natural functioning of marine fish in Barnegat Bay, including essential fish habitat, the reproductive, spawning, and migratory patterns, or species abundance or diversity.

The NMFS letter indicated that NMFS is particularly concerned about OCGS's impacts 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. The Atlantic States Marine Fisheries Commission has stated that Southern New England and Middle Atlantic winter flounder stocks

are depleted due to, at least in part, over-fishing and being over-fished (Ref. 1). As in the past, OCGS impinged and entrained winter flounder in 2006. The 2006 impingement number is within the range of winter flounder impinged annually between 1975 and 1985. The numbers of winter flounder entrained by month in 2006 were compared to historic data. The number of winter flounder entrained in 2006 was within the range (and near the high end of the range) of winter flounder entrained in the past, except for February, which was lower than historic.

Other Impacts

The economics of installing cooling towers may be such that AmerGen will elect to shutdown OCGS if cooling towers are required. PJM Interconnection (PJM), the regional transmission organization responsible for regional planning to ensure future electrical reliability did an analysis to determine the impacts to the transmission system should OCGS be retired (Ref. 2). Recent plant retirements have overloaded the existing transmission system, particularly in northwestern New Jersey. PJM predicts that the retirement of OCGS would significantly increase these already identified overloads. New 500 and 230 kV lines would be required in both Pennsylvania and New Jersey. The new lines would require time to acquire new rights-of-way, transmission siting approval, and environmental permits, in addition to the time necessary to construct, before the new lines could be placed into service. These lines would have environmental impacts associated with construction and operation. Costs could be well in excess of $100 million. These costs would be borne by ratepayers.

In addition, the 640 Mw(e) generated by OCGS would have to be replaced, probably with a base-load fossil-fuel facility. As described above, fossil-fueled plants contribute significantly to air pollution at the point of generation.

Habitat Restoration

AmerGen is working to finalize a renewal of the OCGS NJPDES permit and is pursuing use of habitat restoration as an alternative way to help meet EPA new 316(b) requirements. If the renewed NJPDES permit requires a mitigation/habitat enhancement program to offset losses to the marine and estuarine species, AmerGen anticipates that such a program would include restoration on Finninger Farm and possibly at other Bay locations and that such restoration would (1) further mitigate the small thermal plume at the mouth of Oyster Creek by ameliorating the flow velocity at the creek mouth, and (2) provide nursery habitat for marine species that utilize such habitat in the Bay, further enhancing the reproductive success for those species and contributing to species abundance in the Bay.

Conclusion

AmerGen concludes that, due to adverse noise, air, land use impacts and aesthetic, regulatory compliance issues, and high costs, cooling towers are not a viable option at the OCGS location and that the current station configuration represents one of the best technologies for minimizing impingement, entrainment, and thermal impacts on Barnegat Bay essential fish habitat.

AmerGen is continuing to work with the state on potential habitat restoration efforts and would welcome the opportunity to discuss these issues further with the NMFS. Please contact Bill Maher at (610) 765-5939, if you should have any questions.

Sincerely yours,

Michael P. Gallagher
Vice President License Renewal Projects
AmerGen Energy Company, LLC

cc: Dr. Michael Masnik, USNRC (w/o references)

References (attached):

1) ASMFC (Atlantic States Marine Fisheries Commission). 2006. ASMFC Stock Status Overview. Revised October, 2006.

2) PJM. 2004. Assessment of Transmission Requirements in New Jersey, including PSE&G Retirements and Potential Retirement in 2009 of Oyster Creek.

3) URS. 2006. Determination of cooling tower availability for Oyster Creek Generating Station, Forked River, New Jersey, Final Report. Prepared by URS Corporation for AmerGen Energy Company, LLC. March 2.