Clean Ocean Action

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Ocean Advocacy Since 1984

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Testimony for February 10, 2005 Public Hearing on the Re-licensing of Oyster Creek Nuclear Power Generation Station

Clean Ocean Action is a broad-based coalition of over 170 conservation, environmental, fishing, boating, diving, student, surfing, women's, business, service, and community groups. Our goal is to improve the degraded water quality of the marine waters off the New Jersey/New York coast.

Clean Ocean Action's current focus is on the marine degradations caused by the Plant. An immediate and significant issue for the marine environment, linked to the re-licensing, is the renewal of the required pollution discharge permit. Oyster Creek Nuclear is currently operating under a New Jersey Pollution Discharge Elimination System permit (or "NJPDES permit") that expired in 1999 and has been "administratively extended" by the NJ Department of Environmental Protection. This permit, originally issued in 1994, is outdated (to say the least) and results in significant harm to the marine environment. Fortunately, new Phase II regulations require implementation of the "***best*** *technology available to minimize the adverse environmental impact.*"[1] Revising the Plant's NJPDES permit to comply with Phase II regulations offers one of the most important opportunities to improve Barnegat Bay.

Put simply, the Plant's antiquated cooling water system causes substantial negative impacts to the waterway due to impingement, entrainment, and thermal and pollutant discharges. These impacts are significant. We will briefly review them tonight, however they are described in detail in the Position Paper which has been submitted to the Committee and is also available on Clean Ocean Action's website.

From the outset, it is important to note, that an extensive scientific literature review has revealed that all available data on impingement and entrainment at the Plant are the result of studies performed and/or funded by the Oyster Creek Nuclear Generating Station.

[1] National Pollutant Discharge Elimination System – Final Regulations To Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, Final Rule, 69 Fed. Reg. 41576 (July 9, 2004).

In sum –

Impingement impacts result from animals being pinned against the grate where the water is pulled in from the Creek.

- Plant records indicate 32 impinged and 13 deaths of endangered sea turtles,[2] including Kemp's Ridley, Loggerheads, and Green Sea Turtles since 1992. The Plant has repeatedly exceeded their annual Incidental Take allowances, including an exceedence in 2004 when the Plant impinged twice the allowable take of the most endangered of all sea turtles, Kemp's Ridley. The details, discussed in the Position Paper, outline these deaths and raise questions about the counting process.
- Additionally, over an approximate 2-year period in the mid '70's, a study reported impingement of 13 million fish and invertebrates. Another two-year study in the mid 80's reported impingement of 22 million fish and invertebrates. It is important to note that the long-term survival rates of impinged animals are not known.

Entrainment is when animals are sucked into the Plant and are subjected to numerous and potentially lethal impacts, including thermal shock, shear pressure from water velocity and agitation, and pummeling from contact with machinery.

- Over a two-year period, over 90 trillion microzooplankton (which includes critters like copepods and young clams, snails, worms and barnacle larvae) and 400 billion Macrozooplankton (which includes jellyfish, sand shrimp, grass shrimp, larvae of sandlance and American eels, eggs and larvae of winter flounder, and several crab species) were washed through the system. Again, the long-term survivability rate is not known, but given the exposure and sensitivity of these animals, a high rate of survival is not likely, especially after the animals undergo the final rinse, which will be discussed in a moment.

The once-through cooling system results in an increase in water temperature between 22-33ºF.[3] Water temperature in the discharge canal can reach 110ºF,[4] which affects the behavior, physiology, and habitat utilization of aquatic organisms in the area.[5] The result can be a fatal attraction. Fish can be attracted to the river in the winter when they should have migrated out of the area due to cold temperatures. Failure to migrate can lead to large-scale mortality (due to thermal shock) when the Plant experiences a planned or emergency shut down.

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[2] Assessment of the Impacts of the Oyster Creek Nuclear Generating Station on Kemp's Ridley (*Lepidochelys kempii*), Loggerhead (*Caretta caretta*), and Atlantic Green (*Chelonia mydas*) Sea Turtles. (December 2004), NRC PDR ML# 050060037.

[3] M.J. Kennish, (2001) State of the Estuary and Watershed: An Overview. Journal of Coastal Research. SI 32: 243-273.

[4] Effluent limitations and monitoring requirements of the 1994 (most recent) NJPDES/DSW Permit #NJ0005550 for Oyster Creek Nuclear Generating Station, Part III-B/C.

[5] M.J. Kennish, (2001) State of the Estuary and Watershed: An Overview. Journal of Coastal Research. SI 32: 243-273.

- Records from January 1972 through December 1982 reported over 2.4 million fish killed due to thermal shock including Atlantic menhaden, bay anchovy, bluefish, striped bass and weakfish.[6]

In addition, tropical/subtropical invasive species are able to thrive in the surrounding warm water plume. Two exotic shipworms have benefited from the elevated temperatures with an increase in growth rate and length of breeding season that has lead to a population increase, which creates problems for boat owners in the vicinity of the plume.[7]

During the "final rinse," chlorine is injected through each of the circulating pumps to prevent and remove fouling organisms such as bacteria.[8]

- Chlorine directly kills phyto- and zooplankton entrained in the cooling system and can impact organisms residing in the discharge canal and surrounding waters.
- The Plant has a permitted daily maximum discharge,[9] which is 20 times higher than the lethal limit of many estuarine species, including Striped bass, Mummichogs and Bunker.[10,11]

Additionally, radionuclides are released from the Plant. These radionuclides bioaccumulate throughout the estuarine food web. Reactor-released radionuclides[12] have been detected in water, bottom sediments, benthic marine algae, seagrass, hard clams, blue crabs, bunker, winter flounder, summer flounder, bluefish and several other fish.[13] Organisms collected near the Plant had the highest levels of radionuclides but detectable levels were found through out the bay.[14]

The current NJPDES permit for OCNGS indicates that a maximum daily limit of 15 ppm of Polychlorinated Aromatic Hydrocarbons (PAH's; oil-based contaminants), can be discharged from 5 of their outfall pipes.[15] The sources of these harmful contaminants are not clear.[16]

In short, the Plant's current activities significantly harm Barnegat Bay. This harm is avoidable and must be eliminated. NJDEP is drafting a new NJPDES permit for the Plant. COA will analyze and

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[6] M.J. Kennish, M.B. Roche and T.R. Tatham (1984) Anthropogenic effects on aquatic organisms. In: M.J. Kennish and R.A. Lutz (eds), *Ecology of Barnegat Bay, New Jersey*. NY: Springer-Verlag, pp. 318-338.
[7] M.J. Kennish (2001) State of the Estuary and Watershed: An Overview. Journal of Coastal Research, SI 32: 243-273.
[8] [8] Effluent limitations and monitoring requirements of the 1994 (most recent) NJPDES/DSW Permit #NJ0005550 for Oyster Creek Nuclear Generating Station, Part III-B/C.
[9] Id.
[10] J.S. Mattice and H.E. Zittel (1976) Site-specific evaluation of power Plant chlorination. Journal of Water Pollution Control Federation, 48: 2284-2292.
[11] W.P. Davis and D.P. Middaugh (1977) A revised review of the impact of chlorination processes upon marine ecosystems: update 1977. In: R.L Jolley (eds) *Water Chlorination: Environmental Impact and Health Effects-Volume 1*, Ann Arbor Science, Ann Arbor, Michigan, pgs. 283-310.
[12] Reactor-released radionuclides include, but are not limited to ^{60}Co, ^{137}Cs, ^{54}Mn.
[13] M.J. Kennish (2001) Characterization of the Barnegat Bay-Little Egg Harbor Estuary and Watershed. Journal of Coastal Research, SI 32: 3-12.
[14] R.L. Blanchard and B. Kahn (1979) Abundance and distribution of radionuclides discharged from a BWR nuclear power station into a marine bay. Nuclear Safety 20: 190-205.
[15] Effluent limitations and monitoring requirements of the 1994 (most recent) NJPDES/DSW Permit #NJ0005550 for Oyster Creek Nuclear Generating Station, Part III-B/C.
[16] We will be investigating this further as the values seem rather high.

comment on the permit application and work to ensure that the new permit is consistent with federal and state laws, and adequately resolves the Plant's current marine degradation issues, especially those related to the antiquated once-through cooling system. COA urges this Committee, other organizations, and individuals to do the same.

Finally, at the last hearing, COA and several other environmental groups accepted an invitation from the Plant to take a tour of the Facility. Plant employees have cancelled two scheduled tours. We continue to actively pursue a tour date. We will advise the committee on any progress as requested.

Thank you for the opportunity to testify.