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Technical Specifications  
Appendix B, Section 3.5.1(A)

March 24, 2006

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U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Oyster Creek Generating Station  
Facility Operating License No. DPR-16  
NRC Docket No. 50-219

Subject: Annual Environmental Operating Report (AEOR) - 2005

Enclosed are two copies of the 2005 Annual Environmental Operating Report (AEOR) for the Oyster Creek Generating Station. The AEOR is submitted in accordance with Appendix B, Section 3.5.1(A) of the Oyster Creek Environmental Technical Specifications, as well as Condition 10 of the Incidental Take Statement of the OCGS Endangered Species Act, Section 7 Consultation, Biological Opinion.

If any further information or assistance is needed, please contact Kathy Barnes at 609-971-4970.

Sincerely,



C. N. Swenson  
Vice President, Oyster Creek Generating Station

CNS/MB/KB  
Enclosure

cc: Administrator, USNRC Region I  
USNRC Senior Project Manager, Oyster Creek  
USNRC Senior Resident Inspector, Oyster Creek  
File No. 06005

JE25

**2005**

**ANNUAL ENVIRONMENTAL OPERATING REPORT**

**ENCLOSURE**

**OYSTER CREEK GENERATING STATION**

**LICENSE NO. DPR-16**

**DOCKET NO. 50-219**

**Prepared by:**

**AMERGEN ENERGY COMPANY, LLC**

**March 2006**

## **1.0 Introduction**

The Annual Environmental Operating Report (AEOR) provides a summary of the non-radiological environmental monitoring activities at the Oyster Creek Generating Station (OCGS) during the past year. The AEOR is required by Oyster Creek Environmental Technical Specification (OCETS) Appendix B, Section 3.5.1(A), as well as Condition 10 of the Incidental Take Statement of the OCGS Endangered Species Act, Section 7 Consultation, Biological Opinion. This AEOR covers the period from January 1, 2005 through December 31, 2005.

The OCGS is a boiling water reactor of 619 MWe maximum (summer) dependable net capacity, owned and operated by AmerGen Energy Company, LLC. The OCGS is located in Lacey Township, Ocean County, New Jersey. The plant is subject to Operating License No. DPR-16. The date of initial reactor criticality was May 3, 1969 and the commercial generation of power began on December 23, 1969.

## **2.0 Environmental Monitoring**

This section is intended to address the results of environmental monitoring required to be implemented by Section 1.1 "Fish Kill Monitoring Program" of the OCETS during the reporting period. No NRC-reportable fish kills occurred at the OCGS during 2005.

## **3.0 Special Monitoring and Study Activities**

Incidental Take Reports documenting the circumstances of incidental takes of sea turtles during the reporting period are included in this report in accordance with Condition 10 of the Incidental Take Statement of the OCGS Endangered Species Act, Section 7 Consultation, Biological Opinion. Incident reports concerning the taking of endangered sea turtles entitled "Sea Turtle Incidental Take Report 2005-1 and 2005-2" are provided as Attachments I and II, respectively. The circumstances surrounding the incidental takes that occurred during 2005 are summarized below. In both cases the incidental takes were reported to the Nuclear Regulatory Commission and the National Marine Fisheries Service within 24 hours of the turtles being taken. Inspections and cleaning of cooling water intake trash bars continue to be conducted in accordance with Conditions 1 and 4 of the Incidental Take Statement.

### **Annual Summary of Sea Turtle Incidental Takes**

A juvenile Kemp's ridley sea turtle was found dead among the vegetation, seaweed and debris accumulated on the dilution water system trash racks during the morning of July 4, 2005. The turtle was retrieved as gently as possible using only a dipnet. It appeared to be dead and slightly decomposed, indicating that it may have died several hours or more prior to being observed at the OCGS. At the time of the incidental take, the OCGS was operating at 100% power and the water temperature was approximately 24.3 degrees C

(75.8 degrees F). Operations personnel attempted to resuscitate the turtle without success. NRC and NMFS were notified within 24 hours of the turtle take, and the turtle was taken the same day to the Marine Mammal Stranding Center (MMSC) in Brigantine, NJ. At the MMSC, the turtle was examined, photographed and measured and a necropsy was performed. The turtle exhibited some severe slice wounds (including a partially crushed and sliced skull as well as a sliced carapace), which were most probably the result of a boat propeller collision. Some small scrapes of unknown origin were observed on the ventral surface of the carapace but determined not to be a significant concern by MMSC personnel. After completing the necropsy on the turtle, MMSC personnel buried the carcass at Brigantine, NJ. No stomach contents were found in the turtle during the necropsy. The turtle was buried by MMSC personnel at Brigantine, NJ.

During the early morning of August 5, 2005, an OCGS operator performing a routine cleaning of the trash racks noticed a sea turtle swimming below the water surface within one of the intake bays of the dilution water intake structure. The turtle appeared to be alive, healthy and moving about normally but a wound to a portion of the left front flipper was apparent. The nature of the wound to the turtle indicated it had probably occurred as a result of a previous entanglement with a line or net. OCGS personnel gently removed the turtle from the water and confirmed it to be a juvenile Kemp's ridley sea turtle (Lepidochelys kempi). At the time of the incidental take, the OCGS was operating at 100% power and the water temperature was approximately 28.2 degrees C (82.7 degrees F). NRC and NMFS were notified within 24 hours of the turtle take, and the turtle was taken later the same morning to the Marine Mammal Stranding Center (MMSC) in Brigantine, NJ. At the MMSC, it was examined, photographed and held to ensure it was feeding well. The turtle was transferred August 6, 2005 to the Karen Beasley Sea Turtle Rescue and Rehabilitation Center in Topsail Island, NC for further rehabilitation. The turtle was again transferred August 12, 2005 to the North Carolina State Veterinary School, where successful surgery to the turtle's front flipper was performed.

Regarding trends in the number of incidental sea turtle takes at the OCGS, two incidental takes occurred during 2005 which is slightly less than the long term average of just over two incidental takes per year recorded during the last decade. Also notable was the fact that both of the sea turtles incidentally taken at OCGS during 2005 were Kemp's ridley juveniles.

Eight incidental takes occurred at OCGS during the prior year, the most ever taken at OCGS in a single year. This illustrates the fact that the annual abundance of sea turtles in this vicinity appears to be highly variable, unpredictable, and unrelated to the operation of the OCGS. There were no operational changes undertaken at OCGS which would have been expected to lead to an increase in sea turtle incidental takes. However, there are several factors that may influence the number of sea turtle incidental takes which occur at the OCGS. Barnegat Inlet, the only tidal inlet in the vicinity of Oyster Creek, and which provides access to Barnegat Bay from the Atlantic Ocean, was deepened during dredging operations in the early 1990's. Completion of the Barnegat Inlet

dredging operation resulted in an increase in the tidal prism, or volume of water entering and exiting the inlet on a single tidal cycle, as well as a slightly greater tidal range at Oyster Creek. The deepening of Barnegat Inlet and associated waterway channels was completed immediately prior to 1992, when incidental takes of sea turtles began to occur at OCGS, and may partially explain the relatively recent occurrence of the turtles.

It is likely that the local variability of sea turtle abundance is also related to biological factors including the abundance of organisms on which sea turtles prefer to feed, such as blue crabs, horseshoe crabs, and calico crabs. Crabs are the preferred food of Kemp's ridley turtles and have been found in the stomachs of turtles incidentally taken at OCGS and which were subsequently necropsied. Blue crabs have declined in abundance over the past several years to historic low levels in some bays and estuaries located to the south, such as Chesapeake Bay. The opposite trend has occurred recently in Barnegat Bay, where the abundance of blue crabs has increased markedly during the past few years (NMFS, 2004). The abundance of their preferred food in Barnegat Bay relative to other estuaries could have caused Kemp's ridley turtles to remain within Barnegat Bay and its tributaries for a longer than normal period during 2005 while they browsed and fed.

Physical factors, such as an oceanic front or an oceanic gyre occurring unusually close to Barnegat Inlet, may also play a part in the prevalence of sea turtles near Oyster Creek because oceanic fronts have been shown to be used as a migratory and forage habitat by sea turtles (Polovina et al, 2000). Experience has also shown that the passage of a severe storm or pressure system near Barnegat Inlet can cause major increases in winds, waves, tides and tidal prism in shallow estuarine waters such as Barnegat Bay. These events could increase the likelihood of slowly swimming organisms such as sea turtles occurring in the estuary. During 2005, some named storms passed offshore of New Jersey or close enough to our coast to cause strong and dangerous rip currents. The effect of some of these storms may have been to force some sea turtles from offshore waters into the coastal bays such as Barnegat Bay, or perhaps may have prevented them from exiting the bays as readily as they might have in other years. If the turtles were retained in the bay and its tributaries for a more extended period than normal, it is reasonable to assume that they would have had a greater than normal likelihood of being incidentally taken at the OCGS intake structures.

Many years of environmental sampling conducted near the OCGS have repeatedly demonstrated that the abundance of various marine organisms can vary considerably from year to year, often by orders of magnitude. This is particularly true for seasonal migrants, whose abundance in Barnegat Bay is highly dependent upon physical and biological factors along the migratory route. Therefore, the observed annual variation in sea turtle incidental takes at the OCGS from a minimum of zero to a maximum of eight per year is not considered particularly significant. The ultimate goal of the considerable effort being put forward at the OCGS for the protection of sea turtles is to protect any live turtles that do arrive at the plant, and to release as many turtles as possible to safety. The OCGS program for the protection of threatened and endangered sea turtles can be considered to be quite successful because most of the sea turtles incidentally taken at

OCGS since 1992 have subsequently been released alive and well, to the Atlantic Ocean in locations free from potential cold-shock, due to the efforts of OCGS personnel.

#### **4.0 Additional Information**

This section provides additional information that is required by Section 3.5.1 of the Appendix B OCETS.

##### **4.1 Summary of OCETS Non-Routine Environmental Operating Reports (NEOR) and the corrective action taken to remedy them.**

There were no Non-Routine Environmental Operating Reports (NEORs) during 2005.

##### **4.2 Summary of changes made to state and federal permits and certificates, which pertain to the requirements of the OCETS.**

Because the total number of sea turtle incidental takes during 2004 exceeded the OCGS Incidental Take Statement (ITS) annual limit for Kemp's ridleys, OCGS personnel advised the NRC and NMFS during 2004 that the limit had been exceeded. A formal request to reinstate formal Section 7 consultation for the OCGS was submitted by the NRC to NMFS on August 26, 2004. During discussions between the technical staffs of NRC and NMFS, it was agreed that an updated Biological Assessment for OCGS would be prepared. This revised Biological Assessment (BA) was submitted to NRC and NMFS during the first calendar quarter of 2005. The BA was utilized by those agencies in preparation of a revised Biological Opinion and Incidental Take Statement (BO / ITS) for the OCGS facility. The revised BO / ITS on the impacts of OCGS, dated September 22, 2005, included an Incidental Take Statement to minimize impacts to threatened and endangered sea turtle species. The revised ITS annual take limits were incorporated into the OCGS sea turtle protection program. The OCGS ITS now exempts the annual take of two loggerhead sea turtles with no more than one lethal, eight Kemp's ridley sea turtles with no more than four lethal, or one green sea turtle with no more than one lethal.

##### **4.3 Summary of changes in station design, which could involve an environmental impact.**

During 2005, there were no changes in station design which could involve an environmental impact.

#### **4.4 Summary of changes to the OCETS**

During 2005, there were no changes to the OC Appendix B Environmental Technical Specifications.

#### **References**

National Marine Fisheries Service. 2004. NMFS Landings Query Results, Blue Crab, New Jersey.

Polovina, J.J., D.R. Kobayashi, D.M. Ellis, M.P. Seki, and G.H. Balazs. 2000. Turtles on the edge: Movement of loggerhead turtles (*Caretta caretta*) along oceanic fronts in the central North Pacific, 1997-1998. *Fish. Oceanogr.*, 9: 71-82.

**ENCLOSURE I**  
**ATTACHMENT I**

DOCKET 50-219

**SEA TURTLE INCIDENTAL TAKE REPORT 2005-1**



## OYSTER CREEK GENERATING STATION

### Sea Turtle Incidental Take Report 2005-1

At approximately 0905 hours on Monday July 4, 2005, an Oyster Creek Generating Station (OCGS) operator performing a routine cleaning of the trash racks noticed a sea turtle among the aquatic vegetation, seaweed and debris accumulated within Bay # 1 of the dilution water intake structure. The operator retrieved the turtle as gently as possible using only a dipnet. The turtle appeared to be dead and slightly decomposed, indicating that it may have died several hours or more prior to collection. The Marine Mammal Stranding Center representative who took custody of the turtle the same morning confirmed it to be a juvenile Kemp's ridley sea turtle (Lepidochelys kempi). The water temperature at the time of the incidental take was approximately 75.8 F (24.3 C) and OCGS was in operation at 100% power with four circulating water pumps and two dilution pumps in operation. Although it is impossible to say precisely how long the turtle had been near the dilution structure prior to removal, the dilution water trash racks and intake bays had been inspected just a few hours earlier the same day at approximately 0500 hours. The turtle was not observed during that inspection and cleaning.

The turtle measured 9.1 in (23.2 cm) carapace length straight line and weighed 3 lb (1.4 kg). The turtle exhibited severe slice wounds including a partially crushed and sliced skull as well as a sliced carapace, most probably the result of a boat propeller collision. Some small scrapes were observed on the ventral surface of the carapace. It was not possible to determine exactly when or how the turtle had died prior to arriving at OCGS. However, because of the nature of its wounds prior to its gentle retrieval from the water at OCGS, its death did not appear to have been a result of interaction with the OCGS intake. No tags were present on the turtle when captured. USNRC and NMFS personnel were notified of the capture within 24 hours on July 4, 2005.

The turtle was taken to the Marine Mammal Stranding Center (MMS) in Brigantine, NJ during the early afternoon of July 4, 2005. At the MMS, the turtle was examined, measured and a necropsy performed. The turtle was buried by MMS personnel at Brigantine, NJ.

**ENCLOSURE I**  
**ATTACHMENT II**

DOCKET 50-219

**SEA TURTLE INCIDENTAL TAKE REPORT 2005-2**

## OYSTER CREEK GENERATING STATION

### Sea Turtle Incidental Take Report 2005-2

At approximately 0500 hours on Friday August 5, 2005, an Oyster Creek Generating Station (OCGS) operator performing a routine cleaning of the trash racks noticed a live sea turtle below the water surface within Bay # 4 of the circulating water intake structure. The operator retrieved the turtle as gently as possible. The turtle appeared to be alive and moving about normally but a wound to a portion of the left front flipper was apparent. The Marine Mammal Stranding Center representative who took custody of the turtle the same morning confirmed it to be a juvenile Kemp's ridley sea turtle (Lepidochelys kempi). The water temperature at the time of the incidental take was approximately 82.7 F (28.2 C) and OCGS was in operation at 100% power with four circulating water pumps and two dilution pumps in operation. Although it is impossible to say precisely how long the turtle had been near the circulating water intake structure prior to removal, the circulating water trash racks and intake bays had been inspected only about one hour earlier the same day at approximately 0400 hours. The turtle was not observed during that inspection.

The turtle measured 9.3 in (23.6 cm) carapace length straight line and weighed 4.2 lb (1.9 kg). The turtle exhibited a slight wound to the left front flipper. However, the turtle appeared to be in good health and moving about normally after its gentle retrieval from the water at OCGS. No tags were present on the turtle when captured. USNRC and NMFS personnel were notified of the capture within 24 hours on August 5, 2005.

The turtle was taken to the Marine Mammal Stranding Center (MMSC) in Brigantine, NJ during the morning of August 5, 2005. At the MMSC, the turtle was examined, measured and held for feeding and rehabilitation. The turtle was sent the following day from MMSC to the Sea Turtle Rescue and Rehabilitation Center in Topsail Beach, NC for further rehabilitation and medical evaluation. On August 12, the turtle was transported to the NC State Veterinary School for amputation of the wounded flipper. The turtle then underwent additional rehabilitation before being released into the Atlantic Ocean.