North Atlantic

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The Northeast Utilities System

March 22, 1999

NYD-99011

AR #99004034

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Seabrook Station
Sea Duck Entrapment Report

North Atlantic Energy Service Corporation (North Atlantic) provides the attached report describing the entrapment of twenty nine sea ducks--specifically, white-winged scoters--in Seabrook Station's Circulating Water Cooling System during the period February 20, 1999 to March 16, 1999.

Should you require additional information regarding this matter, please contact me at (603) 773-7762.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.

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Environmental Compliance Manager

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SEA DUCK ENTRAPMENT REPORT

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ENCLOSURE TO NYD-99011

SEABROOK STATION
SEA DUCK ENTRAPMENT REPORT

Sea Duck Entrapment Description:

During the period February 20, 1999 to March 16, 1999, twenty-nine sea ducks were recovered from Seabrook Station's Cooling Water System screen wash debris.

On March 2, 1999, twenty-one of the ducks were provided to the New Hampshire Fish and Game (NHF&G) Department which subsequently confirmed their identification as white-winged scoters. Another seven ducks were provided to NHF&G on March 17, 1999.

White-winged scoters are diving birds and feed underwater on mollusks, including blue mussels. The stomach contents of the entrapped scoters were determined to be mussels.

Apparently the scoters were attracted to the mussels which are present on Seabrook Station's offshore intake structures which are located about one mile off Hampton Beach, about forty feet below the surface. See a more detailed description of Seabrook Station's Cooling System below. Once inside the intake structures, the scoters may have become disoriented and were drawn into the cooling system.

North Atlantic has scheduled a cleaning of the intake structures beginning the last week of March 1999, to remove the fouling organisms, including mussels. This planned cleaning will eliminate a potential food source for the scoters and should also eliminate further entrapments.

North Atlantic notified the New Hampshire Fish and Game Department (NHF&G) of the eleven sea ducks initially entrapped on the first business day following the entrapment[1]. Additional notifications were made to NHF&G regarding the sea ducks subsequently entrapped. North Atlantic also provided courtesy notifications to the Environmental Protection Agency, New Hampshire Department of Environmental Services and National Marine Fisheries Service.

Provided below is a list of the number of sea ducks entrapped by date.

Date	Ducks Entrapped
2/20/99	11
2/21/99	2
2/23/99	3
2/24/99	1
2/26/99	3
3/02/99	1
3/13/99	7
3/16/99	1
Total	**29**

Background Information about Seabrook Station's Offshore Cooling System:

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[1] Notification of sea duck entrapment, telecon between R. Sher (North Atlantic) and C. McBane (NHF&G) on February 22, 1999

Seabrook Station's three offshore Cooling Water System intake structures are located about one mile offshore from Hampton Beach. During full power operations, the cooling water system provides about 450,000 gallons per minute (gpm) of ocean cooling water to the Station. (The Station was operating at full power during the sea duck entrapment incidents).

The ocean cooling water is drawn into three offshore intake structures which are located approximately 7,000 feet offshore from Hampton Beach, New Hampshire. The intakes are 110 feet apart and are located in water about 60 feet deep. The intake structures were designed with velocity caps that allow the relatively large flow of ocean water to be drawn in at a relatively low speed of about 0.5 feet per second. The low intake velocities, as well as the horizontal intake currents provided by the velocity caps, minimize the entrapment of marine organisms.

The velocity intake caps are 30-feet in diameter with seven-foot tall horizontal openings. The top of the intake cap opening is about 40 feet below the ocean surface. The three velocity intake caps draw ocean cooling water inward in a horizontal direction and redirect the flow down via three riser shafts to a single cooling water intake tunnel. Vertical bars are installed every 16 inches around the circumference of the caps to reduce the amount of large debris that can enter the intake.

The ocean cooling water is delivered from the intakes to Seabrook Station, which is located two miles inland from the coast, via a 17,000 foot long tunnel with a 19 foot inside diameter located in bedrock beneath the ocean and salt marsh floor. Each of the three intake structures is connected to the horizontal intake tunnel by a 110 foot tall riser shaft which has a 9 foot inside diameter. The flow rate inside the vertical shaft is approximately six feet per second.

Once the ocean cooling water reaches the intake tunnel, the flow velocity is about 4 feet per second during normal plant power operations. This cooling water is delivered to the Station and provides the water which cools steam in the condensor as well as other Station cooling water needs. A 16,500 foot long discharge tunnel with a 19 foot inside diameter returns the water to the ocean at a point about 3,000 feet south of the intake location.