



**North  
Atlantic**

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The Northeast Utilities System

April 22, 2002  
Docket No. 50-443  
NYN-02041

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

Seabrook Station  
2001 Annual Environmental Operating Report

North Atlantic Energy Service Corporation (North Atlantic) hereby submits the 2001 Annual Environmental Operating Report for Seabrook Station. The enclosed report is a summary of the implementation of the Environmental Protection Plan (EPP) for the period of January 1, 2001 to December 31, 2001. This report is submitted pursuant to the requirements of 10 CFR 50.36b and Section 5.4 of the Seabrook Station Environmental Protection Plan.

It should be noted that the Environmental Protection Agency issued a draft National Pollutant Discharge Elimination System (NPDES) Permit for Seabrook Station on December 4, 2001. The renewed NPDES Permit was issued on February 13, 2002 with an effective date of April 1, 2002.

Should you have any questions regarding this report, please contact Mr. John B. Hart, Manager – Environmental Services, Government and Owner Relations at (603) 773-7762.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.

Gene St. Pierre  
Station Director

cc: H. J. Miller, NRC Region I Administrator  
R. D. Starkey, NRC Project Manager, Project Directorate I-2  
G. T. Dentel, NRC Senior Resident Inspector

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**ENCLOSURE TO NYN-02041**

**Seabrook Station  
Annual Environmental Operating Report  
January 1, 2001 to December 31, 2001**

**Environmental Monitoring Program**

The following provides a summary of the reports related to the Seabrook Station Environmental Monitoring Program and Water Quality Monitoring Program that were submitted to the Environmental Protection Agency (EPA) pursuant to NPDES Permit No. NH0020338.

1. North Atlantic Letter NYE-01003, "1999 Environmental Monitoring Report," dated February 2, 2001. This letter was submitted to the EPA and provided the results of the 1999 Environmental Monitoring Program and responded to the New Hampshire Fish and Game Department's comments on the 1998 Report. Environmental monitoring for Seabrook Station began in the early 1970's, about 20 years before the plant went into full power operation in 1990, and has continued during the ten years of plant operations. Major elements of the program include:

- Water Quality (temperature, salinity, dissolved oxygen)
- Zooplankton (bivalve larvae, macrozooplankton)
- Fish (impingement, entrainment, otter trawl, seine)
- Macrobenthos (macroalgae, macrofauna)
- Epibenthic crustacea (lobsters, crabs)
- Soft-shell clam
- Seals (in-plant and offshore monitoring)

The report concluded that after ten years of operation, Seabrook Station has not impacted the balanced indigenous populations in the Hampton-Seabrook area.

2. North Atlantic letter NYE-01009, "Fifth Supplement to NPDES Permit Renewal Application," dated June 6, 2001. This letter was submitted to the EPA and provided supplemental information on Seabrook Station's NPDES Permit renewal application submitted in April 1998. The letter made the following changes to the April 1998 NPDES Permit Renewal Application:

- An increase to the discharge limit for Methoxypropylamine (MPA) as a chemical in the discharge from Outfall 001 (Circulating Water System).
- Addition of EVAC Molluscicide as a chemical in the discharge from Outfall 001.
- Addition of Dynacool 1385 Scale Inhibitor as a chemical in the discharge from Outfall 001.
- An increase to the Circulating Water System (CWS) discharge delta-temperature to support CWS Pump corrective or preventative maintenance.
- An alternate to the Biopanel Monitoring Program as an element of Chlorine Minimization.
- Addition of a Steam Generator antiscalant as a chemical in the discharge from Outfall 001.

A copy of this letter was provided to the NRC at the time of submittal.

3. North Atlantic Letter NYE-01010, "2000 Environmental Monitoring Program Mid-Year Report," dated June 8, 2001. This letter was submitted to the EPA as required by Part I.A.11.e. of Seabrook Station's NPDES Permit and summarized the Biological, Hydrological and Chlorination Monitoring Program results. North Atlantic stated that after ten years of commercial operation, the Environmental Monitoring Program continues to demonstrate that Seabrook Station has not had a deleterious impact on the balanced indigenous populations in the coastal waters of New Hampshire.
4. North Atlantic Letter NYE-01012, "2000 Hydrological Monitoring Report," dated June 15, 2001. This letter was submitted to the EPA and demonstrated compliance with the NPDES Permit limits on the thermal component of the cooling water system discharge from Seabrook Station in 2000. Seabrook Station's NPDES Permit sets thermal discharge limits during station operation. Specifically, the thermal component of the discharge cannot increase the surface temperature in the near-field jet-mixing region by more than 5° F. The jet-mixing region is the receiving waters within 300 feet of the submerged diffuser in the direction of discharge. This temperature difference, or  $\Delta T$ , is the parameter of interest in demonstrating permit compliance.

The largest  $\Delta T$  values in 2000 occurred during cold-weather months when isothermal ocean conditions exist. The maximum monthly  $\Delta T$  was 3.61° F and occurred during the month of February. Negative monthly mean  $\Delta T$  values occurred for the months of June through August. This condition is a result of thermally stratified ocean conditions when the relatively cold bottom water mixes with the discharge plume and rises to the surface. The surface temperature at Monitoring Station DS is thus less than the temperature at the Reference Station T7, which is not influenced by colder bottom water.

5. North Atlantic Letter NYE-01013, "Proposed Discharge of Neutralized Acid," dated June 28, 2001. This letter was submitted to the EPA and described the planned discharge of sulfuric acid from the Steam Generator Blowdown System Acid storage tank in order to perform an inspection and repairs to the tank. Since this discharge was not explicitly allowed or prohibited by the NPDES Permit and its renewal application, North Atlantic documented the discharge in this submittal and stated that the discharge would comply with the NPDES Permit limit for pH at Outfall 001 (ocean discharge). North Atlantic also explained that safeguards were being taken to ensure no environmental impact.
6. North Atlantic Letter NYE-01014, "Discharge of Chlorination Line Antiscalant – Dynacool 1385," dated June 28, 2001. This letter was submitted to the EPA and described the planned use of an antiscalant, Dynacool 1385, to control the buildup of calcium carbonate in the Cooling Water System's sodium hypochlorite (chlorine) supply line. As a result of its use, small concentrations of Dynacool 1385 will be discharged into the ocean (Outfall 001). This letter was submitted because the discharge of Dynacool 1385 was not specifically described in Seabrook Station's NPDES Permit or its supporting permit renewal application. North Atlantic explained that this discharge would be in accordance with paragraph I.A.1.i.(1) of Seabrook Station's NPDES Permit which pertains to chemical discharges of less than 0.1 mg/liter that occur on a routine or frequent basis. Seabrook Station submitted an NPDES Permit Renewal Application Supplement (item 2 above) which described the use of this antiscalant.

7. North Atlantic Letter NYE -01019, "NPDES Permit Oil and Grease Exceedence at Outfall 025," dated July 30, 2001. This letter notified the EPA and New Hampshire Department of Environmental Services (NHDES) of what at the time was believed to be a daily maximum oil and grease exceedence from a Waste Test Tank discharge. This notification stated that the oil and grease measured in a July 3, 2001 discharge from a Waste Test Tank (Outfall 025) was 20.9 mg/l (daily maximum limit is 20 mg/l). It was also noted that the measured value was suspect for several reasons. However, this condition was reported as an exceedence since a conclusive cause for the high oil and grease value was not identified. Subsequently, it was determined that another discharge occurred from the Waste Holdup Sump on July 3, 2001. The measured oil and grease value for this discharge was <5.0 mg/l. The daily maximum oil and grease value was 10.5 mg/L (the average of the two values) per the NPDES Permit Program Instruction for the Discharge Monitoring Report Form (DMRs) for Report Year 2001 and 40 CFR 122.2. Therefore, an exceedence did not occur. This information was reported to the EPA via telephone conversation and the July DMRs (North Atlantic Letter NYE-01020, dated August 13, 2001).
  
8. North Atlantic Letter NYE-01015, "Response to EPA's Essential Fish Habitat Information Request," dated August 8, 2001. This letter was submitted to the EPA in response to their request for Essential Fish Habitat information as part of the NPDES Permit renewal process. The report contained four sections which assessed:
  - Impacts of Impingement and Entrainment on the Essential Fish Habitat Species
  - Impact of the Thermal Plume on Normal Fish Movement
  - Impact of Plant Operation on the Major Food Items of the Essential Fish Habitat Species
  - Impact of Plant Operation on Habitat Forming Species

The report concluded that Seabrook Station's impingement and entrainment impacts on Essential Fish Habitat species is insignificant when compared to the regional, commercial or recreational take for those species. There is also no evidence that the operation of Seabrook Station has affected the prey items of Essential Fish Habitat species. Finally, the thermal plume does not appear to have any major impact on movement of Essential Fish Habitat species.

9. North Atlantic Letter NYE-01018, "Additional Information – Neutralized Acid Discharges," dated July 26, 2001. This letter was submitted to the EPA to provide specific information about the neutralized acid discharge that occurred on July 3, 2001 to support maintenance on an acid storage tank (see item 5 above). The discharge was performed in compliance with the pH limits at the ocean discharge (Outfall 001). There was no environmental impact associated with this discharge of the 115 gallon neutralized acid solution. The pH was measured at 7.5 prior to introduction to Outfall 001. The Circulating Water System flow at the time was about 450,000 gpm.
  
10. North Atlantic Letter NYE-01021, "Sixth Supplement to NPDES Permit Renewal Application," dated October 5, 2001. This letter was submitted to the EPA and provided supplemental information on Seabrook Station's NPDES Permit renewal application submitted in April 1998. The letter made the following changes to the April 1998 NPDES Permit Renewal Application:

- Updated description of Makeup Water Treatment System and its discharges to Outfall 001 (Circulating Water System).
- Description of new product acid and caustic discharges from the Steam Generator Blowdown Acid and Caustic Storage Tanks as an input chemical in the discharge from Outfall 025C (Waste Holdup Sump).
- Toxicity test results of Methoxypropylamine (5.0 ppm) on sea urchin egg fertilization.
- Inspection and Cleaning of Offshore Intake Structures

A copy of this letter was provided to the NRC at the time of submittal.

11. North Atlantic Letter NYE-01023, "2000 Chlorine Minimization Report," dated October 12, 2001. This letter was submitted to the EPA and described compliance with the NPDES Permit limits on the chlorine levels discharged by Seabrook Station's cooling water system. During 2000, chlorine levels discharged from Seabrook Station, measured as the Total Residual Oxidant (TRO), were below the NPDES Permit limits of 0.2 ppm daily maximum and 0.15 ppm monthly average.

Seabrook Station employs continuous low-level chlorination to control biofouling in the Circulating Water and Service Water Systems as specified by Part I.A.1.a of the NPDES Permit. Section I.A.2.h of the Permit states that the "objective of this chlorination report is to continue minimizing the usage of chlorine consistent with maintaining a suitable biofouling control of the intake cooling water system and maintaining a high condenser efficiency."

Chlorine measurements of the Cooling Water System discharge (measured as Total Residual Oxidant or TRO) are obtained at the Discharge Transition Structure prior to entry into the discharge tunnel. The TRO values are reported in the monthly Discharge Monitoring Reports (DMRs) to both the EPA and NHDES.

12. North Atlantic Letter NYE-01027, "2000 Environmental Monitoring Report," dated December 21, 2001. This letter was submitted to the EPA and provided the results of the 2000 Environmental Monitoring Program. Environmental monitoring for Seabrook Station began in the early 1970's, about 20 years before the plant went into full power operation in 1990, and has continued during the eleven years of plant operations. Major elements of the program include:

- Water Quality (temperature, salinity, dissolved oxygen)
- Zooplankton (bivalve larvae, macrozooplankton)
- Fish (impingement, entrainment, otter trawl, beach seine)
- Macrobenthos (subtidal algae, macrofauna)
- Epibenthic crustacea (lobsters, crabs)
- Soft-shell clam

The report concluded that after eleven years of operation, Seabrook Station has not impacted the balanced indigenous populations in the Hampton-Seabrook area. It should be noted that this report did not include a section on seals since they have not been entrapped since the installation of the Seal Deterrent Barrier in August 1999. Seal monitoring continued in 2000, however.

### **EPP Non-Compliance and Corrective Actions**

There was one NPDES Permit exceedence reported to the EPA in the monthly Seabrook Station Discharge Monitoring Reports (DMRs) for the 2001 operating period and it is described below.

A pH exceedence of 8.1 for Outfall 001 (ocean discharge) was recorded on January 15, 2001. The NPDES limits for pH are 6.5-8.0. The NPDES Permit allows for pH values to exceed 8.0 only when the value is equivalent to that naturally occurring in the receiving waters, which is measured at the Intake Transition Structure. A sample was not obtained from the Intake Transition Structure to verify that the influent pH was also 8.1 at that time. The weekly pH values from the prior and subsequent weeks were both 8.0 – within permit limits. The EPA and NHDES were notified of this exceedence on the same day it was discovered. It was also reported that no plant activities were identified at that time which could have contributed to this pH exceedence. In addition, the pH of the influent waters has occasionally been greater than 8.0. Therefore, it is North Atlantic's position that the pH of the influent water was 8.1 and an actual pH exceedence did not occur. This information was reported to the EPA in North Atlantic Letter NYE-01004, "January 2001 Discharge Monitoring Reports," dated February 14, 2001.

In the November 2001 DMRs, an exceedence value of 41.2 mg/L was incorrectly reported for the monthly average Total Suspended Solids (TSS) for Outfall 024 (Oil/Water Separator Vault #3). The actual monthly average TSS value was 28.3 mg/L (limit is 30 mg/L) which is not an exceedence. This correction was reported in the December 2001 Discharge Monitoring Reports (NYE-02001, dated January 15, 2002) and was based on a corrected method for calculating monthly average values obtained from a discussion with the New Hampshire Department of Environmental Services. The corrective action to prevent recurrence was to update the procedure for calculating the monthly average value.

### **Changes in Station Design or Operation, Tests and Experiments Involving a Potentially Unreviewed Environmental Question**

During 2001, there were no changes in Station design or operation, tests and equipment which involved a potentially unreviewed environmental question.

## **Non-Routine Reports**

1. North Atlantic Letter LIC-01122, "2001 Annual Report on Seal Entrapment Mitigation Measures," dated June 11, 2001. This report to the National Marine Fisheries Service (NMFS) was the second annual report on Seabrook Station's Seal Entrapment Mitigation Measures and was submitted in accordance with the NMFS Letter of Authorization to take a small number of seals incidental to intake cooling water system operations. North Atlantic previously reported to NMFS that Seal Deterrent Barriers had been installed on Seabrook Station's offshore intake structures in August 1999. Seals have not been entrapped since the installation of the Seal Deterrent Barriers was completed.
2. North Atlantic Letter LIC-01194, "Request for Reduction in Seal Monitoring Requirements," dated August 24, 2001. This submittal to the NMFS requested relief from certain monitoring requirements of the NMFS Letter of Authorization to take a small number of seals incidental to intake cooling water system operations at Seabrook Station. This request was made following the completion of a two-year evaluation period after the installation of the Seal Deterrent Barrier in August 1999. The evaluation period has demonstrated that the Seal Deterrent Barrier is fully effective. Seals have not been entrapped in Seabrook Station's cooling water system since the Seal Deterrent Barrier installation was completed on August 18, 1999. Specifically, North Atlantic requested that the requirement to conduct daily cooling water system traveling screen washes and debris examinations for seal remains from August through December, be eliminated. The requirement to conduct twice per week screen washes and debris examinations throughout the year in accordance with the Environmental Monitoring Program will continue. In the unlikely event of another entrapment, the Environmental Monitoring Program screen washes would adequately detect the presence of seal remains. North Atlantic requested that the requirement to inspect the Intake Transition Structure for seal remains during the April through December time period also be eliminated. The inspections of the pumphouse forebays at least twice per day should adequately detect the presence of entrapped seals.