August 9, 2000

Mr. Ted C. Feigenbaum
Executive Vice President and Chief Nuclear Officer
Seabrook Station
North Atlantic Energy Service Corporation
c/o Mr. James M. Peschel
P.O. Box 300
Seabrook, NH 03874

SUBJECT: NRC's SEABROOK INSPECTION REPORT NO. 05000443/2000-005

Dear Mr. Feigenbaum:

On July 1, 2000, the NRC completed an inspection at your Seabrook reactor facility. The enclosed report presents the results of that inspection. The results were discussed on July 13, 2000, with Mr. W. DiProfio and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.
The NRC identified one issue that was evaluated under the risk significance determination process and determined to be of very low safety significance (Green). The issue was entered into your corrective action program and is discussed in the summary of findings and in the body of the attached inspection report.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

James Linville, Chief
Projects Branch 6
Division of Reactor Projects

Docket No. 05000443
License No: NPF-86

Enclosure: NRC Inspection Report No. 05000443/2000-005
cc w/encl:
B. D. Kenyon, President and Chief Executive Officer

J. M. Peschel, Manager - Regulatory Programs
W. A. DiProfio, Station Director - Seabrook Station
R. E. Hickok, Nuclear Training Manager - Seabrook Station
D. E. Carriere, Director, Production Services
L. M. Cuoco, Esquire, Senior Nuclear Counsel
D. A. Smith, Manager of Regulatory Affairs, Northeast Nuclear Energy Company
W. Fogg, Director, New Hampshire Office of Emergency Management
D. McElhinney, RAC Chairman, FEMA RI, Boston, Mass
R. Backus, Esquire, Backus, Meyer and Solomon, New Hampshire
D. Brown-Couture, Director, Nuclear Safety, Massachusetts Emergency Management Agency
F. W. Getman, Jr., Vice President and Chief Executive Office, BayCorp Holdings, LTD
R. Hallisey, Director, Dept. of Public Health, Commonwealth of Massachusetts
M. Metcalf, Seacoast Anti-Pollution League
D. Tefft, Administrator, Bureau of Radiological Health, State of New Hampshire
S. Comley, Executive Director, We the People of the United States
W. Meinert, Nuclear Engineer
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	05000443
License No.:	NPF-86
Report No.:	05000443/2000-005
Licensee:	North Atlantic Energy Service Corporation
Facility:	Seabrook Generating Station, Unit 1
Location:	Post Office Box 300 Seabrook, New Hampshire 03874
Dates:	May 21 - July 1, 2000
Inspectors:	Raymond Lorson, Senior Resident Inspector Javier Brand, Resident Inspector Jason Jang, Senior Health Physicist Laurie Peluso, Health Physicist
Approved by:	James Linville, Chief Projects Branch 6 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000443-00-05, on 05/22-07/01/2000; North Atlantic Energy Service Corporation; Seabrook Station; Unit 1. In-service Testing.

The inspection was conducted by resident inspectors and two regional radiation specialist inspectors. This inspection identified one green issue. The significance of the issue is indicated by its color (GREEN, WHITE, YELLOW, RED) that was determined by the Significance Determination Process (SDP) in draft Inspection Manual Chapter 0609 (see Attachment 1 for a description of the new reactor oversight process).

Mitigating Systems

1. **Green**. A formal test program had not been developed to ensure that the control building air conditioning (CBA) system would remain capable of performing its design safety function during plant operation. Criterion XI, "Test Control," of Appendix B to 10 CFR 50, requires, in part, that written test procedures be established to demonstrate that components will perform satisfactorily in-service. The failure to develop an adequate test program for monitoring the CBA system performance was not considered a violation since the system had been installed and the NUREG 1431 specified test periodicity had not been exceeded. The NRC used the significance determination process to evaluate the risk significance of not developing an adequate test program for the CBA system. This issue was considered a green finding in the significance determination process since it did not affect the immediate operability of the system (Section 1R22).

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Report Details

Summary of Plant Status: The plant was operated at approximately 100% power for most of the inspection period. On June 5, 2000, the licensee initiated daily sampling of the condenser off-gas system following the detection of argon-41 in the off-gas stream. The argon-41 detection indicated the potential for a steam generator tube leak of approximately 0.07 gallons per day. On June 26, 2000, the reactor operator (RO) manually tripped the reactor from 100% power due to a steam generator (SG) low water level condition. The SG water level condition was caused by the unexpected loss of the 'A' main feedwater (MFW) pump. The licensee corrected the cause for the reactor trip and the operators performed a reactor start-up on June 29. The plant was returned to 100% power on June 30.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

a. Inspection Scope

On June 21, 2000, the inspector toured six areas important to reactor safety to observe the control of combustible materials and ignition sources, material condition and line-up of the fire protection systems, and condition of the fire barriers. The areas toured included: the control building air conditioning area, the cooling tower and ocean service water pump rooms, the condensate storage tank room, the emergency feedwater (EFW) pump room, and the containment electrical penetration area.

b. Findings

There were no findings identified.

1R11 Licensed Operator Re-qualification Program

a. Inspection Scope

On June 30, 2000, the inspector observed a re-qualification training exercise involving a simulated steam generator tube failure event. The inspector reviewed the performance of the operating crew, emergency operating procedure usage, and the exercise critique performed by the training staff.

b. Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspector reviewed the implementation of the maintenance rule for the systems classified as category (a) (1) per the maintenance rule. The review included: the identification and resolution of maintenance rule related problems, the characterization

of system failures, and the appropriateness of the goals and plans to restore the systems to the category (a) (2) status.

The following systems and/or components were classified as Category (a)(1) at the time of the review:

- Post-Accident Sampling System
- Electro-hydraulic Pressure Switches
- Wide Range Gas and Condenser Air Evacuation Radiation Monitoring Systems
- Post-accident Monitoring Chart Recorders
- Control Building Air Conditioning System
- Emergency Feedwater Pump House Air Handling
- Radio Communications
- Main Steam Isolation Valves
- Service Air
- Train B Emergency Power Sequencer Relays
- Service Water Ocean Pumps
- Rod Control Integrated Circuit Chips

b. Findings

There were no findings identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspector observed portions of maintenance activities performed on several safety-related systems including: minor corrective maintenance activities on the turbine driven emergency feedwater pump, re-routing of the ‘A’ emergency diesel generator (EDG) lubricating oil tubing to correct an alarm indication problem, replacement of the power supply of a failed source range nuclear instrument, and troubleshooting of the solid state protection system to determine the root cause for the 'A' MFW pump trip on June 26.

Additionally, the inspectors reviewed the scope and control of maintenance activities performed during the forced outage. The review included evaluation of the licensee’s actions to minimize the plant risk associated with the removal of systems during the outage.

b. Findings

There were no findings identified.

1R14 Personnel Performance During Nonroutine Evolutions

a. Inspection Scope

The inspectors observed the operators perform the plant start-up and power ascension performed on June 29, following the forced outage. The review focused on focused on the pre-start-up preparations, reactivity controls, crew performance and procedural compliance.

b. Findings

There were no findings identified.

1R15 Operability Evaluation

.1 Service Water (SW) Cooling Tower Fan (2-SW-FN-51B) Review

a. Inspection Scope

The inspector reviewed operability determination (OD) 00-07393 that was performed to evaluate a non-conforming electrical coil that was installed in the supply breaker control circuit for SW cooling tower fan 51B. The inspector reviewed the licensee's basis for concluding that the fan remained operable in the "as found" condition.

b. Findings

There were no findings identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the post-maintenance test activities performed following completion of the maintenance items discussed in section 1R13. The review included the scope of the test activities and equipment performance during and subsequent to the testing. Additionally, on June 26, the inspector observed post-maintenance testing of the positive displacement charging pump (PDP) following the replacement of two pistons.

b. Findings

There were no findings identified.

During the PDP post-maintenance testing review, the inspector identified several examples of human error in which technicians failed to identified problems that had occurred. This is further discussed in Section 4OA4, Cross-cutting Issues, of this report.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed surveillance testing of the "A" charging pump, and also observed stroke testing of a condenser steam dump valve and the letdown heat exchanger inlet flow valve (CS-H-128).

Additionally, the inspectors reviewed the licensee's program for performing periodic testing of the newly installed safety-related control building air conditioning (CBA) system. The CBA system modification was performed in accordance with design change request (DCR) 98-039. The inspectors reviewed whether the licensee's planned test activities would properly demonstrate that the CBA system could perform its design safety function.

b. Findings

The safety-related CBA system is required to maintain the control room temperature within acceptable limits following a design basis accident. Section 9.4.1.2 of the Updated Final Safety Analysis Report (UFSAR) indicated that the system was required to remove the heat load equivalent to 53 tons of refrigeration during design accident conditions. The recently installed CBA system included two independent air conditioning units. Each unit was designed to supply of 60 tons of refrigeration capacity.

The licensee's planned safety-related CBA system test program required periodic operation of the system to ensure that it could maintain the control room temperature within acceptable limits. The testing would demonstrate that the CBA system could remove the actual heat load present in the control room during the test conditions, but would not demonstrate that the system retained the capability to remove the design basis control room heat load. Criterion XI, "Test Control," of Appendix B to 10 CFR 50, requires, in part, that written test procedures be established to demonstrate that components will perform satisfactorily in-service. The licensee initiated CR 00-07979 to develop a written procedure to ensure that the CBA system performance would be properly monitored. The failure to develop an adequate test program for monitoring the CBA system performance was not considered a violation since the system was recently installed and the associated modification package had not been fully closed out.

The inspector did not consider this test program deficiency to be an immediate operability concern since the licensee reported that the system operated properly during the post-modification testing. The NRC used the significance determination process to evaluate the risk significance of not developing an adequate test program for the safety-related CBA system. The failure to develop an adequate test program for monitoring the CBA system performance was not considered a violation since the system had been recently installed and the NUREG 1431 specified test periodicity had not been exceeded.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control

m. Inspection Scope

The effectiveness of access controls to radiologically significant areas was determined during June 12-16, 2000. Surveys, postings, and barricades for exposure significant work areas in high radiation areas less than 1R/hr, including the demineralizer alley (Room PB-209), were observed and verified. Independent measurements were obtained of radiation levels within the radiologically controlled areas (RCAs). Radiological survey records, postings and barricades for radiation areas were reviewed and verified. All locked high radiation areas (LHRAs) were physically challenged and verified. The locked high radiation area keys were inventoried. The associated procedure (HN0958.30) and key logbook were reviewed. Control of a LHRA door during capping of a high integrity container in the waste processing building was observed. Selected workers were interviewed and observed regarding their knowledge of the (1) applicable RWP, (2) dosimetry set points, and (3) job-site radiological conditions for work performed in the waste processing building. Ten CRs, which occurred between June, 1999 and June, 2000, were reviewed that addressed worker performance errors. Associated common cause evaluations and corrective actions were examined.

b. Findings

There were no findings identified.

Cornerstone: Public Radiation Safety

2PS1 Gaseous and Liquid Effluents

a. Inspection Scope

The following documents were reviewed to ensure the licensee met the requirements specified in the Technical Specifications/Offsite Dose Calculation Manual (TS/ODCM): (1) the 1998 and 1999 Radiological Annual Effluent Release Reports; (2) the most recent Offsite Dose Calculation Manual (ODCM, Revision 21, April 12, 2000) and technical justifications for ODCM changes; (3) monthly, quarterly, and annual projected doses to the public; (4) sampling and analyses for turbine building sump water, charcoal cartridge, particulate filter, and noble gas samples; (5) implementation of the compensatory sampling program; (6) calibration records for laboratory measurements equipment; (7) measurement laboratory quality control programs; (8) quarterly self-assessments; and (9) quality assurance (QA) audits for the RETS/ ODCM implementations.

The following systems were reviewed for operability: (1) plant vent sampling devices; (2) air cleaning systems; and (3) effluent radiation monitoring systems.

The most recent channel calibration and functional testing results for the following effluent radiation monitoring systems were reviewed: (1) liquid radwaste test tank discharge radiation monitor; (2) steam generator blowdown flash tank drain radiation monitor; (3) turbine building sumps effluent line radiation monitor; (4) primary component cooling water system radiation monitor; (5) plant vent-wide range noble gas monitors; and (6) gaseous waste processing noble gas monitor.

The most recent channel calibration and functional testing results for the following flow rate measurement devices were also reviewed: (1) liquid radwaste test tank discharge; (2) steam generator blowdown flash tank drain; (3) primary component cooling water system; and (4) plant vent flow rate monitor.

Surveillance testing results for the following air cleaning systems were reviewed: (1) control room emergency makeup air and filtration; (2) fuel storage building emergency air cleaning; and (3) containment enclosure emergency air cleanup.

b. Findings

There were no findings identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

n. Inspection Scope

The inspector reviewed the accuracy and completeness of the licensee's performance indicator (PI) data. Specifically, the Occupational Exposure Control Effectiveness PI, was verified and validated. Additionally, the following items were reviewed and assessed: (1) ten CRs from a list dated June 1999 to June, 2000; (2) one abnormal dosimeter report from a list dated January 1999 to June 2000; and (3) associated radiological surveys and supporting data for the above records.

o. Findings

There were no findings identified.

4OA3 Event Follow-up

.1 Reactor Trip

a. Inspection Scope

The inspector reviewed the licensee's response to the reactor trip that occurred on June 26, 2000. The RO manually inserted the reactor trip in response to a SG low water level condition that was caused by the unexpected trip of the "A" MFW pump. The inspector examined plant alarm and process data to evaluate the response of plant equipment to the trip, observed operator performance shortly following the trip, and reviewed the licensee's corrective actions for the cause of the trip.

b. Findings

There were no findings identified.

.2 (Closed) LER 50-443/00-003-00: Shutdown Bank Rods Mis-alignment During Quarterly Rod Operability Surveillance. On May 29, 2000, during a quarterly control rod surveillance test, the licensee determined that two of the four Shutdown Bank E control rods were positioned below the TS required level. Specifically, control rods H-4 and H-12 were found to be positioned at 224, and 221 steps respectively in lieu of the TS required 225 step position.

The TS requirement was designed to ensure that the shutdown bank could insert sufficient negative reactivity during a reactor shutdown. The inspector noted that this event had a negligible impact on the available excess shutdown reactivity, and concluded that this event had minimal significance. The licensee formed an event team to determine the root cause for the rod control system problem. The root cause for the equipment problem had not been identified by the conclusion of the period. The failure to maintain control rods H-4 and H-12 above the TS required level was considered a violation of minor significance and not subject to formal enforcement action. This LER is closed.

4OA4 Cross-cutting Issues

Human Performance Problems

a. Inspection Scope

During routine baseline inspection activities, the inspectors assessed whether Seabrook technicians and other personnel identified problems during the conduct of work activities and documented the problems as required by the Seabrook corrective action program.

b. Findings

There were no findings identified.

The inspectors identified several examples in which technicians or operators had not identified problems with the potential to affect the mitigation systems cornerstone. Each of these issues was considered to be minor since the equipment remained operable as verified by the inspectors during the baseline inspections. However, these NRC identified items represented human performance errors on the part of station personnel to identify problems and document them in the corrective action program. It was further noted that these examples were similar to observations discussed in Section 4OA4 of Inspection Report 05000443/2000-003 as a cross-cutting issue on problem identification.

The inspectors identified the following examples:

The reference markings used to identify the locations for obtaining the pump and motor vibration data had been painted over prior to vibration testing of the charging system

positive displacement pump (PDP) on June 26. This introduced the potential for inconsistency between the data collected during the post-maintenance test and the data collected during previous tests. The licensee subsequently installed permanent fittings to ensure consistency during future vibration data collection activities.

The PDP crankcase oil level decreased below the minimum level marked on the oil sightglass shortly after the pump was started during the June 26 testing. The oil level increased above the minimum level during the subsequent pump operation. The personnel performing the test did not identify this, and the inspector determined that they were not knowledgeable about whether this was an acceptable pump operating condition. The licensee initiated CR 00-08000 to confirm that the initial pump response was acceptable.

The inspector identified that the nuclear systems operator (NSO) log indicated that the satisfactory reading for the spent fuel pool liner leak detection verification was "no steady flowing water with level in the sump below the lowest tell-tail". The NSOs have been consistently documenting this log reading as satisfactory while there appeared to be a steady flow of water from the tell-tail drain tubing. The inspector interviewed several NSO's and found an inconsistent understanding of the "flowing water" requirement. The licensee determined that the plant conditions were acceptable and initiated CR 00-006697 to clarify the operating log acceptance criteria.

4OA5 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. W. DiProfio and other members of licensee management on July 13, 2000. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

W. Diprofio, Unit Director
J. Grillo, Assistant Station Director
G. StPierre, Operations Manager
B. Seymour, Security Manager
T. Nichols, Technical Support Manager
D. Sherwin, Maintenance Manager
M. Bianco, Radwaste Supervisor
M. Campbell, Radiological Technical Specialist
W. Cash, Health Physics Department Manager
B. Clark, Radiological Services Supervisor
P. Fields, Radwaste Technician
R. Finch, Health Physics Technician
D. Hampton, Health Physics Supervisor
I. McCabe, Health Physics Records Supervisor
M. Perkins, Health Physics Technician
R. Sterritt, Radiological Technical Specialist
R. Thurlow, Health Physics Technical Supervisor

ITEMS OPENED, CLOSED AND DISCUSSED

Closed

LER 50-443/00-003-00	Shutdown Bank Rods Mis-alignment During Quarterly Rod Operability Surveillance

LIST OF ACRONYMS USED

CR	condition report
CBA	control building air conditioning system
DCR	design change request
EDG	emergency diesel generator
EFIN	engineering fix-it-now team
EFW	Emergency Feedwater
HRA	high radiation areas
LER	Licensee Event Report
LHRA	locked high radiation area
MFW	main feedwater
NSO	nuclear systems operator
OD	operability determination
ODCM	Offsite Dose Calculation Manual
PDP	positive displacement charging pump
PI	performance indicator
QA	quality assurance
RCA	radiologically controlled areas
RETS	Radiological Effluents Technical Specification
RO	reactor operator
RWP	radiation work permit
SG	steam generator
SR	surveillance requirement
SW	service water
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and

increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.