January 16, 2002

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: SEABROOK STATION - NRC INSPECTION REPORT 50-443/01-11

Dear Mr. Feigenbaum:

On December 29, 2001, the NRC completed an inspection at the Seabrook nuclear power station. The enclosed report documents the inspection findings which were discussed on January 4, 2002, with Mr. G. St. Pierre and other members of your staff.

The inspection examined 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of these inspections, the inspectors identified one issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation, in accordance with Section VI.A.1 of the NRC' s Enforcement Policy. If you deny this Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of these inspection reports, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Seabrook facility.

Immediately following the terrorist attacks on the World Trade Center and the Pentagon, the NRC issued an advisory recommending that nuclear power plant licensees go to the highest level of security, and all promptly did so. With continued uncertainty about the possibility of additional terrorist activities, the Nation's nuclear power plants remain at the highest level of security and the NRC continues to monitor the situation. This advisory was followed by additional advisories, and although the specific actions are not releasable to the public, they generally include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with law enforcement and military authorities, and more limited access of personnel and vehicles to the sites. The NRC has conducted various audits of your response to these advisories and your ability to respond to terrorist attacks with the capabilities of the current design basis threat (DBT). From these audits, the NRC has concluded that your security program is adequate at this time.

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/reading-rm.html.

Sincerely,

/RA/

Curtis J. Cowgill, Chief
Projects Branch 6
Division of Reactor Projects

Docket No. 50-443
License No: NPF-86

Enclosure: NRC Inspection Report No. 50-443/01-11
Attachment: Supplemental Information

cc w/encl:
B. D. Kenyon, President and Chief Executive Officer
J. M. Peschel, Manager - Regulatory Programs
G. F. St. Pierre, Station Director - Seabrook Station
D. G. Roy, Nuclear Training Manager - Seabrook Station
D. E. Carriere, Director, Production Services
W. J. Quinlan, Esquire, Assistant General Counsel
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
S. Allen, Polestar Applied Technology, Incorporated
R. Shadis, New England Coalition Staff
J. Bean, Regional Director, FEMA RI (EP Exercise & EP Inspection Reports)

Distribution w/encl: **(VIA E-MAIL)**
H. Miller, RA/J. Wiggins, DRA
T. Bergman, RI EDO Coordinator
E. Adensam, NRR (ridsnrrdlpmlpdi)
G. Wunder, PM, NRR
C. Cowgill, DRP
K. Jenison, DRP
T. Haverkamp, DRP
J. Brand, RI - Seabrook
DRS Branch Chief (5)
L. Prividy, DRS
T. Moslak, DRS
P. Frechette, DRS
N. McNamara, DRS
Region I Docket Room (with concurrences)

DOCUMENT NAME: G:\BRANCH6\SEABROOK\sea 01-10.wpd
After declaring this document "An Official Agency Record" it **will** be released to the Public.
To receive a copy of this document, indicate in the box: "**C**" = Copy without attachment/enclosure "**E**" = Copy with attachment/enclosure "**N**" = No copy

OFFICE	RI/DRP		RI/DRP					
NAME	GDentel / KMJ f/		CCowgill/CJC1					
DATE	01/15/02		01/16/02					

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-443
License No.:	NPF-86
Report No.:	50-443/01-11
Licensee:	North Atlantic Energy Service Corporation
Facility:	Seabrook Generating Station, Unit 1
Location:	Post Office Box 300 Seabrook, New Hampshire 03874
Dates:	November 18 - December 29, 2001
Inspectors:	Glenn Dentel, Senior Resident Inspector Javier Brand, Resident Inspector
Approved by:	Curtis Cowgill, Chief Projects Branch 6 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000443-01-11, 11/18-12/29, 2001; North Atlantic Energy Service Corporation; Seabrook Station; Unit 1. Event Follow-up.

The inspection was conducted by resident inspectors. The inspection identified one Green finding, which was a Non-Cited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "no color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/reactors/operating/oversight.html.

A. Inspector Identified Findings

Cornerstone: Initiating Events

- **GREEN.** The inspectors identified that the licensee failed to implement effective corrective actions to prevent a control rod drop and subsequent reactor trip in October 2001. From May 2000 through August 2001, the licensee experienced control rods dropping several steps. The root cause performed in December 2000 included corrective actions that were narrowly focused, and subsequent actions were ineffective in preventing the reactor trip.

  The reactor trip, a transient on the plant, was a credible impact on safety. The finding was determined to be of very low safety significance (GREEN) since only the initiating event cornerstone was affected and the finding had no impact on mitigating systems. The failure to implement effective corrective actions was a Non-Cited Violation of 10 CFR 50 Appendix "A" Criterion XVI "Corrective Action." (Section 4AO3.1).

B. Licensee Identified Violations

There were no violations identified by the licensee during this inspection.

Report Details

Summary of Plant Status: The plant was operating at approximately 100% power for the duration of the inspection period.

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

1R04 Equipment Alignments

.1 Partial Walkdown-Service Water System

a. Inspection Scope

On December 27, the inspectors performed a partial walkdown of the "A", "B", and "D" service water pumps prior to removal of the "C" service water pump for planned preventive maintenance. The inspectors reviewed the system alignment as described on plant drawings and performed field verification in the service water pump house for major equipment alignment. The inspectors also examined the material condition of the pumps and motors and discussed with operators and engineers regarding specific material condition discrepancies.

b. Findings

No findings of significance were identified.

.2 Partial Walkdown-Owner Control Area Security

a. Inspection Scope

The inspectors performed a partial walkdown of the owner controlled area, reviewed security procedures, temporary post instructions, and interviewed applicable personnel to verify proper security patrols and oversight of the site owner controlled area after the September 11 incident.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors performed a partial review of the emergency diesel generator (EDG) heat exchangers thermal performance testing and monitoring program to verify that corrective actions for previously identified minor programmatic deficiencies which could mask degraded performance were properly implemented. Specifically, the inspector reviewed condition reports (CRs) 01-05241 and 00-09155 regarding the creation of tube plugging criteria for the EDG heat exchangers.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (NRC Inspection Report Administrative Error)

NRC inspection report 50-244/01-010, issued on December 12, 2001, contained an administrative error in documenting that 96% of the individuals passed all portions of the examination. The actual percentage of individuals that passed all potions of the examination was 98%.

1R12 Maintenance Rule Implementation

Containment Building Spray, Residual Heat Removal, Primary Auxiliary Building, Enclosure Air Handling, and Solid State Protection System Reviews

a. Inspection Scope

The inspectors evaluated Maintenance Rule (MR) implementation for the containment building spray (CBS), the residual heat removal (RH), the primary auxiliary building (PAB) and enclosure building air handling (EAH), and the solid state protection (SSPS) systems. The inspectors examined the last six months of CRs associated with these systems, and reviewed in detail a selected sample of these CRs and determined whether the issues should have been classified as maintenance preventable functional failures. The system performance and scope reports were also examined and evaluated. Specific attributes reviewed included MR scoping, characterization of failed structures, systems, and components (SSCs), and MR risk categorization of SSCs, SSC performance criteria or goals and appropriateness of corrective actions. The inspectors reviewed in detail the following CRs: 1) RH system - CRs 01-12591, 01-11649, 01-09108, 01-08261, 01-04119; 2) CBS system - CRs 01-08066, 01-08031, 01-07404, 01-07338, 01-05927, 01-02725, 01-12972; 3) PAB and EAH system - CRs 01-00276, 01-01555, 00-13748, 00-14233; and 4) SSPS system - CRs 00-07526, and 01-08242.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the scheduling and control of maintenance activities in order to evaluate the effect on plant risk. The inspectors reviewed the routine planned maintenance and emergent work for the following equipment removed from service:

- On November 28, a small jacket cooling water leak (approximately 1 drop per second) was identified at a coupling during the surveillance test on the “A” emergency diesel generator. The inspectors performed field inspections of the coupling, examined the initial evaluation for operability documented in

CR 01-12697, and examined the potential risk of corrective maintenance activities. A review of the post-maintenance testing (PMT) after repairs of the coupling was completed and is documented in Section 1R19.

- On November 25 throughout December 21, the inspectors performed inspections of maintenance painting activities on the "A" and "B" EDG rooms. The inspectors performed several field walkdowns, and interviewed field personnel and job supervisors to verify proper controls and EDG system redundancy during the painting activities.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

The inspectors reviewed operator performance during the following nonroutine plant evolution:

On December 11, the inspectors observed leak seal repair activities on the "A" steam generator secondary side man-way. The inspectors attended several pre-job briefings, interviewed personnel, reviewed the controls on the vendor performing the repair, reviewed the oversight by quality assurance, and examined maintenance and design engineers involvement. The inspectors also consulted with regional specialists, reviewed TMOD-0022 and the applicable 10 CFR 50.59 evaluation performed by engineering to support the repair, and interviewed chemistry and health physics personnel, to ensure that proper controls and evaluations were implemented.

In addition, the inspectors evaluated the licensee's actions to address a deficiency identified by the licensee (CR 01-13600), involving the mis-positioning of the repair clamp which resulted in the injection of a lesser amount of sealant material, and the licensee's actions to address repeated steam leaks at the secondary side steam generator man-ways.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed several operability evaluations (OD's) in order to determine that the identified conditions did not adversely affect safety system operability or plant safety. In addition, where a component was determined to be inoperable, the inspectors verified the technical specification (TS) limiting condition for operation implications were properly addressed. The inspectors performed field walkdowns, interviewed personnel, and reviewed the following items:

- OD 01-12746, which evaluated the inadvertent installation of non-safety related "O-ring" material in the safety related actuators for the main feedwater isolation valves (1-FW-V-39 and 48).
- OD 01-13093, which evaluated the failure of a valve disk washer for the primary component cooling water check valve (CC-V-4). This failure resulted in system leakage due to inability of the check valve to fully close.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed one completed PMT activity to ensure: 1) the PMT was appropriate for the scope of the maintenance work completed; 2) the acceptance criteria were clear and demonstrated operability of the component; and 3) the PMT was performed in accordance with procedures. The following PMT was reviewed:

On November 30, OS1026.01, "Operation of DG1A, " Rev. 9, following re-torquing of a jacket water cooling fitting for the "A" EDG to stop a minor leak.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed portions of several surveillance testing activities of safety related systems to verify that the system and components were capable of performing their intended safety function, to verify operational readiness, and to ensure compliance with required TSs and surveillance procedures.

The inspectors attended some of the pre-evolution briefings, performed system and control room walkdowns, observed operators and technicians perform test evolutions, reviewed system parameters, and interviewed the system engineers and field operators. The inspectors also reviewed the actions taken by the instrumentation and control (I &C) department management to address minor procedural deviations from the I& C technicians during the surveillance (CR 01-13372), and verified that the procedural deviations did not affect the surveillance test results. The following surveillance procedures were reviewed.

- On November 30, OX0443.01, "Diesel Fire Pump Weekly Test," Rev. 6.
- On December 12, IS 1610.126, "F-7326 Charging Pump 2B Miniflow Calibration," Rev. 5

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

.1 Reactor Coolant System Activity

a. Inspection Scope

The inspector observed a reactor coolant system sampling for iodine analysis performed on December 4, 2001, per chemistry procedure CS 0910.01, “Primary System Sampling at SS-CP-166A,”. The inspector also compared the analysis results of the sample performed by the chemistry department per procedure, CX 0901.02, “Determination of Dose Equivalent I-131,” to the TS limits and previously reported reactor coolant system activity performance indicator data.

b. Findings

No findings of significance were identified

.2 Reactor Coolant System Leakage

a. Inspection Scope

The inspector reviewed the design documents, procedures, and input data to confirm that the licensee was properly monitoring and reporting data for the reactor system leakage performance indicator

b. Findings

No findings of significance were identified

4OA3 Event Follow-up

.1 (Closed) URI 50-443/01-010-01: Automatic Reactor Trip From 100 Percent Power During Quarterly Rod Surveillance Testing.

a. Inspection Scope

On October 15, the reactor automatically tripped from 100 percent power during quarterly rod surveillance testing. Control rod, N11, dropped into the reactor core causing a reactor trip on power range high flux negative rate. This event and an associated Unresolved Item were discussed in NRC Inspection Report 50-443/01-010.

During this inspection, the licensee's event evaluation, root cause evaluation, and proposed corrective actions were reviewed. The inspectors also examined a previous root cause completed on December 4, 2000, CRs 00-13777, 01-00872, 01-05004, and 01-08480, and past electrical traces of the control rods' stationary and moveable gripper coils. The inspectors also interviewed the root cause team leader, the assistant operation's manager, and various engineers to determine the adequacy of current and past corrective actions.

b. Findings

The inspectors identified that the licensee failed to implement effective corrective actions to prevent a control rod drop and subsequent reactor trip. This issue was determined to be a Non-Cited Violation of 10 CFR 50 Appendix "A" Criterion XVI "Corrective Action" and assessed as having very low significance (i.e. GREEN finding) due to only affecting initiating events and having no affect on mitigating equipment.

In 2000 through 2001, the licensee experienced several individual control rods dropping several steps into the reactor core. In each case prior to the October 15th event, the control rods dropped less than 14 steps. In December 2000, the licensee completed a root cause analysis and recommended corrective actions to prevent recurrence. The corrective actions were narrowly focused on electrical issues. Extensive electrical testing and preventive maintenance was performed during the refueling outage in the fall of 2000. The probable root cause was determined to be a slightly improperly seated electrical card in the circuitry that controls control rod movement. The card was properly seated prior to the unit restart in January 2001.

In December 2000, January, May, and August 2001, operators experienced additional individual control rods dropping several steps. These additional instances showed that the root cause was incomplete and corrective actions taken did not prevent recurrence. In the CRs issued in December 2000 and January 2001, engineers performed a cause and failure analysis and determined the most likely cause was particle or "CRUD" buildup on the control rod drive shaft. No corrective actions were initiated or a formal root cause performed to identify and implement actions to prevent recurrence even though operators identified that the movement of the rods was "an uncontrolled descent ... [with] an unpredictable number of steps and is terminated by the engagement of a control rod drive mechanism grippers." This information was taken from Standing Operating Order 00-009 issued in response to the original problem. Based on this

information, the inspectors concluded that the possibility of a control rod dropping fully into the core was identified, and appropriate actions were not taken following the instances in December 2000 and January 2001. Some additional actions were identified following the May and August instances but no formal root cause was performed and the corrective actions did not prevent recurrence.

The inspectors reviewed the root cause evaluation completed in December 2001 and determined that the evaluation was appropriately performed. The root cause was determined to be particulate deposits in the rod drive housing or on the rod drive which inhibits the stationary gripper engagement on the drive rod. The inspectors concluded the cause of the event would not prevent the control rod from fulfilling its safety function of dropping into the reactor core ("tripping") when called upon by the reactor protection system. The initial corrective actions taken were designed to reduce the likelihood of an automatic reactor shutdown during control rod surveillance testing. Longer term actions will be based on additional licensee inspections planned for the next refueling outage in May of 2002.

The inspectors determined that failure to prevent recurrence resulted in the rod drop and reactor trip and was a finding. This finding did have a credible impact on safety: however, since only the initiating event cornerstone is affected and had no other impact than increasing the likelihood of an uncomplicated reactor trip, the finding is considered to be of very low safety significance (GREEN).

10 CFR 50 Appendix "A" Criterion XVI "Corrective Action" requires for significant conditions adverse to quality, measures shall be taken to assure that the cause of the condition is determined and corrective actions taken to preclude repetition. Contrary to the above, the licensee failed to properly determine the cause of control rods dropping several steps into the reactor core during 2000 and 2001 and failed to take corrective actions to preclude recurrence. This failure resulted in a reactor trip and was a violation of 10 CFR 50 Appendix "A" Criterion XVI. In accordance with Section VI.A.1 of the NRC Enforcement Policy, this violation is being treated as a Non-Cited Violation **(NCV 50-443/01-011-01)**. This issue was entered into the licensee's corrective action program as CR 01-10868.

4OA6 Meetings, including Exit

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. Gene St. Pierre and other members of licensee management following the conclusion of the inspection on January 4, 2002. The licensee acknowledged the findings presented.

The licensee did not indicate that any of the information presented at the exit meeting was proprietary.

.2 Site Management Visit

On December 20, 2001, Mr. Curtis Cowgill, Chief, Projects Branch 6, toured Seabrook Station and met with station personnel and the residents to review plant performance.

ATTACHMENT

SUPPLEMENTAL INFORMATION

a. Key Points of Contact

Licensee:

P. Freeman	Manager, Nuclear Design Engineering (Electrical)
R. LeGrand	Manager, Work Control and Outages
W. Leland	Manager, Chemistry/Health Physics
T. Nichols	Manager, Plant Engineering
J. Peschel	Manager, Regulatory Programs
B. Plummer	Manager, Operations
R. Sherwin	Manager, Maintenance
G. St. Pierre	Station Director
J. Vargas	Director, Engineering
R. White	Manager, Nuclear Design Engineering (Mechanical)

b. Items Opened, Closed, and Discussed

Opened and Closed:

50-443/01-011-01	NCV	Failure to Implement Effective Corrective Actions to Prior Control Rod Drops of Several Steps Resulted in a Reactor Trip. (Section 4OA3.1)

Closed:

50-443/01-010-01	URI	Automatic Reactor Trip From 100 percent Power During Quarterly Rod Surveillance Testing. (Section 4OA3.1)

c. List of Acronyms Used

CR	Condition Report
CBS	Containment Building Spray System
EAH	Enclosure Air Handling
EDG	Emergency Diesel Generator
I&C	Instrumentation and Control
MR	Maintenance Rule
NCV	Non-Cited Violation
OD	Operability Evaluations
PAB	Primary Auxiliary Building
PMT	Post Maintenance Testing
RH	Residual Heat Removal
SDP	Significance Determination Process
SSC	Structure, System, or Component
SSPS	Solid State Protection Systems
TMOD	Temporary Modifications
TS	Technical Specifications
URI	Unresolved Item