



**North
Atlantic**

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The Northeast Utilities System

December 3, 1999

Docket No. 50-443

AR# 99009486

NYN-99110

United States Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555-0001

Seabrook Station
Response to Generic Letter (GL) 99-02,
"Laboratory Testing of Nuclear-Grade Activated Charcoal"

The purpose of this letter is to respond to the Nuclear Regulatory Commission (NRC) requests for information identified in GL 99-02. On June 3, 1999, the NRC issued GL 99-02 to alert licensees that the NRC had determined that testing nuclear-grade activated charcoal to standards other than American Society for Testing and Materials (ASTM) D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon," does not provide assurance for complying with the current licensing basis as it relates to the dose limits of General Design Criterion (GDC) 19 of Appendix A to Part 50 of Title 10 of the Code of Federal Regulations (10CFR) and Subpart A of 10 CFR Part 100. Specifically, the NRC requested that licensees determine whether their Technical Specifications (TS) reference ASTM D3803-1989 for charcoal filter laboratory testing. It was identified that licensees whose TS do not reference ASTM D3803-1989 should amend their TS to reference ASTM D3803-1989 or propose an alternative test protocol.

Enclosure 1 contains the North Atlantic Energy Service Corporation (North Atlantic) responses to the GL 99-02 requested information for Seabrook Station. Enclosure 3 contains a list of North Atlantic identified commitments associated with this generic letter response.

Should you have any questions regarding this response, please contact Mr. James M. Peschel, Manager - Regulatory Programs, at (603) 773-7194.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.


Ted C. Feigenbaum

Executive Vice President and Chief Nuclear Officer

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cc: H. J. Miller, NRC Region I Administrator
R.M. Pulsifer, NRC Project Manager, Project Directorate 1-2
R. K. Lorson, NRC Senior Resident Inspector

STATE OF NEW HAMPSHIRE

Rockingham, ss.

DATE: December 3, 1999

Then personally appeared before me, the above-named Ted C. Feigenbaum, being duly sworn, did state that he is Senior Vice President and Chief Nuclear Officer of the North Atlantic Energy Service Corporation that he is duly authorized to execute and file the foregoing information in the name and on the behalf of North Atlantic Energy Service Corporation and that the statements therein are true to the best of his knowledge and belief.





Susan J. Messer

My Commission Expires: December 2, 2003

ENCLOSURE 1 TO NYN-99110

Generic Letter 99-02 Requested Information

REQUIRED INFORMATION:

1. Within 180 days of the date of this generic letter, submit a written response to the NRC describing your current TS requirements for the laboratory testing of charcoal samples for each ESF ventilation system including the specific test protocol, temperature, RH, charcoal bed thickness, total residence time per bed depth, and penetration at which the TS require the test to be performed. If your current TS specifically require laboratory testing of charcoal samples in accordance with the ASTM D3803-1989 protocol at 30°C [86°F], and you have been testing in accordance with this standard, then you only need to address this requested action (i.e. no TS amendment or additional testing is required).

RESPONSE:

The laboratory testing of charcoal samples for each ESF ventilation system is identified in Surveillance Requirements 4.6.5.1.b.2 Containment Enclosure Emergency Air Cleanup System (EAH), 4.7.6.1 Control Room Emergency Makeup Air and Filtration (CBA) Subsystem, and 4.9.12.b Fuel Storage Building Emergency Air Cleaning (FAH) System. Copies of the applicable Technical Specifications Surveillance Requirements are provided in Enclosure 2. The following table identifies the current Technical Specification requirements pertaining to the testing of charcoal samples for each ESF ventilation system for Seabrook Station:

Surveillance Requirement	System	Test Protocol	Temp.	RH	Charcoal Bed Thickness (Inches)	Total Residence Time (per Bed Depth)	Methyl Iodide Penetration
4.6.5.1.b.2	EAH	Reg. Guide 1.52 Rev. 2 (2) ASTM D3803	30°C	95%	N/A (1) (4)	N/A (1)	< 2.14%
4.6.5.1.c	EAH	Reg. Guide 1.52 Rev. 2 (2) ASTM D3803	30°C	95%	N/A (1) (4)	N/A (1)	< 2.14%
4.7.6.1.b.2	CBA	Reg. Guide 1.52 Rev. 2 (2) (3)	N/A (1) (3)	N/A (1) (3)	N/A (1) (5)	N/A (1)	< 1%
4.7.6.1.c	CBA	Reg. Guide 1.52 Rev. 2 (2) (3)	N/A (1) (3)	N/A (1) (3)	N/A (1) (5)	N/A (1)	< 1%
4.9.12.b.2	FAH	Reg. Guide 1.52 Rev. 2 (2) ASTM D3803	30°C	95%	N/A (1) (4)	N/A (1)	< 1%

Surveillance Requirement	System	Test Protocol	Temp.	RH	Charcoal Bed Thickness (Inches)	Total Residence Time (per Bed Depth)	Methyl Iodide Penetration
4.9.12.c	FAH	Reg. Guide 1.52 Rev. 2 (2) ASTM D3803	30°C	95%	N/A (1) (4)	N/A (1)	< 1%

Notes:

- (1) Parameter not specified in the Technical Specifications.
- (2) ANSI N510-1980 is used in place of ANSI N510-1975 as referenced in Regulatory Guide 1.52 Revision 2. ANSI N510-1980 references the use of ASTM D3803-1979. Method A of ASTM D3803-1979 is used.
- (3) Current testing of the CBA system charcoal is performed at 30°C and at 70% RH.
- (4) The charcoal bed thickness is 4 inches.
- (5) The charcoal bed thickness is 2 inches for CBA-F-38 and 4 inches for CBA-F-8038.

REQUIRED INFORMATION:

2. **If you choose to adopt the ASTM D3803-1989 protocol, submit a TS amendment request to require testing to this protocol within 180 days of the date of this generic letter. The request should contain the test temperature, RH, and penetration at which the proposed TS will require the test to be performed and the basis for these values. If the system has a face velocity greater than 110 percent of 0.203 m/s [40 ft/min], then the revised TS should specify the face velocity. Also, indicate when the next laboratory test is scheduled to be performed.**

RESPONSE:

North Atlantic chooses to adopt the ASTM D3803-1989 "Standard Test Method for Nuclear-Grade Activated Carbon" protocol for the laboratory testing of charcoal samples for each ESF ventilation system identified in the Technical Specifications for Seabrook Station. License Amendment Request 99-04 has been submitted to the NRC by letter (NYN-99111) dated December 3, 1999 to revise the appropriate Technical Specification sections.

The next laboratory test is expected to be performed by July 15, 2000.

REQUIRED INFORMATION:

3. **If you are proposing an alternate test protocol, address the attributes discussed below and submit a TS amendment request to require testing to this alternate protocol within**

180 days of the date of this generic letter. The request should contain the test temperature, RH, and penetration at which the proposed TS will require the test to be performed and the basis for these values. If the system has a face velocity greater than 110 percent of 0.203 m/s [40 ft/min], then the revised TS should specify the face velocity. Also, indicate when the next laboratory test is scheduled to be performed.

The following information should be submitted for staff review to determine the acceptability of the alternate protocol:

- 1. summary of the test method**
- 2. precision of the method**
- 3. description of the test apparatus along with tolerances**
- 4. parameter specifications**
- 5. material requirements**
- 6. hazards**
- 7. preparation of the apparatus before initiation of the test**
- 8. calibration requirements of the test equipment**
- 9. test procedure**
- 10. manner of calculating penetration and error**
- 11. repeatability and reproducibility of the results for 1 percent and 10 percent penetration and the penetration at a 95 percent confidence interval for charcoal tested at 70 percent RH and at 95 percent RH**
- 12. bias associated with the method**
- 13. results from at least two laboratories which demonstrate that the alternate test protocol achieves results that are consistent with, or more conservative than, results associated with ASTM D3803-1989.**

The demonstration identified in Item 13 above should be based upon a series of tests comparing the alternate test protocol and ASTM D3803-1989, and it should

apply to both new and used charcoal tested at 70 percent RH and at 95 percent RH. If an addressee chooses to test its charcoal samples at actual accident conditions which are different from the test conditions specified in ASTM D3803-1989, then that test should be treated as an alternate protocol. At least two laboratories should be used in determining the acceptability of the alternate protocol. One laboratory should be used to develop the alternate protocol and the other to demonstrate the repeatability and reproducibility of the alternate protocol. The two laboratories should be able to demonstrate that the alternate protocol is at least as conservative as ASTM D3803-1989, and should be able to perform the ASTM D3803-1989 test and achieve repeatable and reproducible results.

RESPONSE:

As identified in the response to requested information item (2), North Atlantic chooses to adopt the ASTM D3803-1989 "Standard Test Method for Nuclear-Grade Activated Carbon" protocol for the laboratory testing of charcoal samples for each ESF ventilation system identified in the Technical Specifications for Seabrook Station. Therefore, the proposal for an alternate test protocol is not necessary.

REQUIRED INFORMATION:

- 4. At the next required laboratory surveillance test of a charcoal sample that is 60 or more days after the date of this generic letter, test your charcoal samples in accordance with ASTM D3803-1989 or replace all of the charcoal with new charcoal that has been tested in accordance with ASTM D3803-1989. In all cases, the results should meet the acceptance criterion that is derived from applying a safety factor as low as 2 (see the note in Enclosure 2 [to the generic letter]) to the charcoal filter efficiency assumed in your design-basis dose analysis and the charcoal samples should continue to be tested in accordance with ASTM D3803-1989, in lieu of the current TS-required laboratory testing, until the TS amendment is approved by the NRC.**

RESPONSE:

The laboratory testing of charcoal samples for each ESF ventilation system identified in the Technical Specifications for Seabrook Station taken after August 2, 1999 will be performed utilizing the protocol for ASTM D3803-1989 "Standard Test Method for Nuclear-Grade Activated Carbon" or all of the charcoal will be replaced with new charcoal that has been tested in accordance with ASTM D3803-1989.

REQUIRED INFORMATION:

- 5. Addressees who choose not to do the above actions are requested to notify the NRC in writing of their decision, as soon as a decision is reached but no later than 60 days from the date of this generic letter. The 60 day written response should also discuss (1) addressee plans to pursue a proposed alternative course of action (including the basis for establishing its acceptability), (2) the schedule for submitting that proposal for NRC staff review (that proposal should be submitted to the NRC no later than 180 days from the date of this generic letter), and (3) the basis for continued operability of affected systems and components until such time that the proposed alternative course of action is approved by the NRC.**

RESPONSE:

Refer to the response to required information items 1, 2, 3 and 4. This action is not applicable to Seabrook Station.

ENCLOSURE 2 TO NYN-99110

CONTAINMENT SYSTEMS

3/4.6.5 CONTAINMENT ENCLOSURE BUILDING

CONTAINMENT ENCLOSURE EMERGENCY AIR CLEANUP SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.1 Two independent Containment Enclosure Emergency Air Cleanup Systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one Containment Enclosure Emergency Air Cleanup System inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 Each Containment Enclosure Emergency Air Cleanup System shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes;
- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:
 - 1) Verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978*, and the system flow rate is 2100 cfm \pm 10%;
 - 2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978*, meets the laboratory testing criteria

*ANSI N510-1980 shall be used in place of ANSI N510-1975 referenced in Regulatory Guide 1.52, Rev. 2, March 1978.

CONTAINMENT SYSTEMS

CONTAINMENT ENCLOSURE BUILDING

CONTAINMENT ENCLOSURE EMERGENCY AIR CLEANUP SYSTEM

SURVEILLANCE REQUIREMENTS

4.6.5.1b.2 (Continued)

- of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978*, by showing a methyl iodide penetration of less than 2.14% when tested at a temperature of 30°C and at a relative humidity of 95% in accordance with ASTM-D3803; and
- 3) Verifying a system flow rate of 2100 cfm \pm 10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978*, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978*, by showing a methyl iodide penetration of less than 2.14% when tested at a temperature of 30°C and at a relative humidity of 95% in accordance with ASTM-D3803.
- d. At least once per 18 months by:
- 1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge while operating the system at a flow rate of 2100 cfm \pm 10%,
 - 2) Verifying that the system starts on a Safety Injection test signal,
 - 3) Verifying that the filter cross connect valves can be manually opened, and
 - 4) Verifying that each system produces a negative pressure of greater than or equal to 0.25 inch Water Gauge in the annulus within 4 minutes after a start signal.
- e. After each complete or partial replacement of a high efficiency particulate air (HEPA) filter bank, by verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a dioctyl phthalate (DOP) test aerosol while operating the system at a flow rate of 2100 cfm \pm 10%; and

*ANSI N510-1980 shall be used in place of ANSI N510-1975 referenced in Regulatory Guide 1.52, Revision 2, March 1978.

PLANT SYSTEMS

3/4 7.6 CONTROL ROOM SUBSYSTEMS

EMERGENCY MAKEUP AIR AND FILTRATION

LIMITING CONDITION FOR OPERATION

3.7.6.1 Two independent Control Room Emergency Makeup Air and Filtration Subsystems shall be OPERABLE.

APPLICABILITY: All MODES

ACTION:

MODES 1, 2, 3 and 4:

With one Control Room Emergency Makeup Air and Filtration Subsystem inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODES 5 and 6:

- a. With one Control Room Emergency Makeup Air and Filtration Subsystem inoperable, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE Control Room Emergency Makeup Air and Filtration Subsystem in the filtration/recirculation mode.
- b. With both Control Room Emergency Makeup Air and Filtration Subsystems inoperable, or with the OPERABLE Control Room Emergency Makeup Air and Filtration Subsystem, required to be in the filtration/recirculation mode by ACTION a., not capable of being powered by an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.7.6.1. Each Control Room Emergency Makeup Air and Filtration Subsystem shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating:

PLANT SYSTEMS

CONTROL ROOM SUBSYSTEMS

EMERGENCY MAKEUP AIR AND FILTRATION

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:
- 1) Verifying that the filtration system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than .05% and uses the test procedure guidance in Regulatory Position C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978*, and the system flow rate is $1100 \text{ cfm} \pm 10\%$;
 - 2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978*, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978*, for a methyl iodide penetration of less than 1.0%; and
 - 3) Verifying a system flow rate of $1100 \text{ cfm} \pm 10\%$ during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978*, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978*, for a methyl iodide penetration of less than 1.0%;
- d. At least once per 18 months by:
- 1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks, for filter CBA-F-38, is less than 2.8 inches Water Gauge while operating the system at a flow rate of $1100 \text{ cfm} \pm 10\%$; and verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks, for filter CBA-F-8038, is less than 6.3 inches Water Gauge while operating the system at a flow rate of $1100 \text{ cfm} \pm 10\%$.
 - 2) Verifying that upon generation of an 'S' test signal, the following automatic system functions occur:
 - a. The normal makeup air fan(s) trip off and the normal makeup air isolation damper(s) close;

*ANSI N510-1980 shall be used in place of ANSI N510-1975 as referenced in Regulatory Guide 1.52, Revision 2.

REFUELING OPERATIONS

3/4.9.12 FUEL STORAGE BUILDING EMERGENCY AIR CLEANING SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 Two independent trains of the Fuel Storage Building Emergency Air Cleaning System shall be OPERABLE whenever irradiated fuel is in the storage pool and shall be OPERABLE with one train operating during fuel movement.

APPLICABILITY: Whenever irradiated fuel is in the storage pool.

ACTION:

- a. With one train of the Fuel Storage Building Emergency Air Cleaning System inoperable, fuel movement within the storage pool or crane operation with loads over the storage pool may proceed provided the OPERABLE train of the Fuel Storage Building Emergency Air System is capable of being powered from an OPERABLE emergency power source and is in operation and discharging through at least one train of HEPA filters and charcoal adsorbers.
- b. With no trains of the Fuel Storage Building Emergency Air Cleaning System OPERABLE, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one train of the Fuel Storage Building Emergency Air Cleaning System is restored to OPERABLE status and is in operation.
- c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required trains of the Fuel Storage Building Emergency Air Cleaning System shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;
- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

REFUELING OPERATIONS

FUEL STORAGE BUILDING EMERGENCY AIR CLEANING SYSTEM

SURVEILLANCE REQUIREMENTS

4.9.12b (Continued)

- 1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978,* and the system flow rate is 16,450 cfm \pm 10%;
 - 2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978,* meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978,* by showing a methyl iodide penetration of less than 1.0% when tested at a temperature of 30°C and at a relative humidity of 95% in accordance with ASTM-D-3803; and
 - 3) Verifying a system flow rate of 16,450 cfm \pm 10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978,* meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978,* by showing a methyl iodide penetration of less than 1.0% when tested at a temperature of 30°C and at a relative humidity of 95% in accordance with ASTM-D-3803.
- d. At least once per 18 months by:
- 1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge while operating the system at a flow rate of 16,450 cfm \pm 10%;
 - 2) Verifying that the system maintains the spent fuel storage pool area at a negative pressure of greater than or equal to 1/4 inch Water Gauge relative to the outside atmosphere during system operation,

*ANSI N510-1980 shall be used in place of ANSI N510-1975 as referenced in Regulatory Guide 1.52, Rev. 2, March 1978.

ENCLOSURE 3 TO NYN-99110

North Atlantic Commitments Contained in NYN-99110

Description of Commitment

AR#99009486-03

Establish the controls necessary to ensure that the laboratory testing of charcoal samples for each ESF ventilation system identified in the Technical Specifications for Seabrook Station taken after August 2, 1999 will be performed utilizing the protocol for ASTM D3803-1989 "Standard Test Method for Nuclear-Grade Activated Carbon" or all of the charcoal will be replaced with new charcoal that has been tested in accordance with ASTM D3803-1989.